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ABSTRACT

The final evaluation report provides an assessment and discussion of the FY 1974 activities of the Research for Better Schools' Career Education Program, one of four employer-based career education programs currently funded by the National Institute for Education. The introduction (section 1) provides an overview of the evaluation activities and the conduct of the project. Student population (section 2) describes the experimental and comparison groups utilized in the project. Formative evaluation (section 3) describes the program elements and how they functioned during FY 1974. Summative evaluation (section 4) focuses on the testing of hypotheses posed for the project. Summary and recommendations (section 5) contains an overview of the major findings and the implications and recommendations of these findings for further program development and expansion. It was concluded that students, parents, employers, and public school representatives reacted positively to the program, both personally and as an educational contribution. (Author)

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CAREER EDUCATION PROGRAM

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FY 1974

FINAL EVALUATION REPORT

September 30, 1974

Volume I

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FINAL EVALUATION REPORT

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September 30, 1974

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FINAL EVALUATION REPORT

I. INTRODUCTION

The Final Evaluation Report provides an assessment and discussion of the activities of the Research for Better Schools Career Education Program during FY 1974. This program is one of the four employer-based career education programs currently funded by the National Institute for Education. This final report summarizes much information which has been elaborated before (see evaluation report listing in Appendix A), as well as presenting new data and analyses principally of a summative nature.

This report is divided into five major sections. The Introduction (Section I) provides an overview of the evaluation activities and the conduct of the project. Student Population (Section II) describes the experimental and comparison groups utilized in the project. Formative Evaluation (Section III) describes the program elements and how they functioned during FY 1974. Summative Evaluation (Section IV) focuses on the testing of hypotheses posed for the project. Summary and Recommendations (Section V) contains an overview of the major findings and the implications and recommendations of these findings for further program development and expansion. In addition to the sections of text, the following appendices are provided for reference: A. Listing of Evaluation Reports, B. Instruments and Testing Procedures, C. Instruments Developed During FY 1974, D. Procedural Audit Report.

Research for Better Schools, Inc. (RBS) is responsible for developing, operating and testing a prototype of experience-based career education (EBCE). This program has been operationalized in Philadelphia as the Academy for Career Education (ACE). The Academy operated during FY 1974 as a licensed private academic school with senior students receiving their total educational program from the Academy. All seniors were in the program for their second year. All juniors and sophomores were in the program for their first year during FY 1974. Their curriculum differed somewhat as a result of an increasing integration of the Academy with the Philadelphia Public Schools. Juniors and sophomores participated in the "core" Academy program, while taking some courses (foreign languages, driver training, physical education, etc.) at their sending school. Students thus fell into two distinct groups: seniors who attended the Academy courses only, and juniors and sophomores who attended some public school courses in addition to Academy offerings. All students participated in the "core instructional component" which consisted of three major subdivisions: Career Development, Career Guidance and Basic Skills. This core constituted the bulk of each student's academic program with at least 14 hours of instruction per week. It is this core program which forms the substance of the present report. The other instructional component, Supplementary Programs, was available only to seniors and has been discontinued as movement is made toward having the public schools adopt an experience-based career education program.

The first subdivision within the instructional core was Career Development. This consisted of Career Exploration and Career Specialization activities for students. In Career Exploration students experienced group programs (selected by them out of a large number of possibilities) at commercial and industrial sites by employees of the various businesses involved. Students participated in these first-hand activities in order to learn about the economic community, to test their own vocational interests, and to obtain information for their career planning. In Career Specialization students selected a specific career area and investigated it in depth. These experiences were highly individualized and required extensive interaction at a single community site.

The second subdivision within the instructional core was Career Guidance. This consisted principally of small group guidance sessions which met each week. These sessions focused on life skills, academic motivation, integration of Academy activities, self exploration and career planning. Career Guidance also included individual counseling of students.

The third subdivision within the instructional core was Basic Skills. Students were scheduled for activities in an Individualized Learning Center several times each week. These activities focused on development in Communication Skills and Mathematics and utilized a variety of individualized instructional resources. The Individualized Learning for Adults approach was the primary learning system.

These subdivisions combined to form a core of instructional activities which were characteristically individualized and responsive to student needs. The Academy program was designed to maximize student development and choice within an operational structure which could serve a large number of students at feasible costs.

The evaluation of the Academy program during FY 1974 was conducted by an internal project evaluation staff according to the evaluation design specified in the FY 1974 Operating Plans. This design consisted of both formative and summative elements.

The program components most relevant to student instruction formed the principal subject matter of the formative evaluation design. They were: Employer Support, Employer Utilization, Basic Skills, Career Development, Guidance and Instructional Systems. For each of these instructional components, the formative evaluation process was organized to address the specific issues identified in the evaluation plan and generally to provide the following information:

1. An explication of the purpose, composition, organization, procedures, and operational strategies of the project.
2. Evidence regarding the degree to which components are meeting stated objectives.
3. Detailed information on the costs associated with each component.

This information was gathered by procedures discussed below. In general, the formative evaluation depended upon operational records systems, questionnaires and interviews.

The formative effort resulted in the following reports:

REPORT	DATE COMPLETED
1. 15A1 Instructional Systems Design	12/31/73
2. 10C1a Employer Support Evaluation/ 11C1 Employer Utilization Evaluation	7/1/74
3. 12dC1 Guidance Evaluation 1	5/15/74
4. 14C1 Basic Skills Evaluation	5/15/74

REPORT			DATE COMPLETED
5.	15B1	Instructional Systems Field Test	4/15/74
6.	11C1 13C1	Employer Utilization Evaluation/ Career Development Evaluation	6/1/74
7.	12fC2	Guidance Evaluation II	7/15/74
8.	15C1	Instructional Systems Evaluation	7/15/74

For each instructional unit except Basic Skills two evaluation reports were completed during the year. For Instructional Systems there were two additional reports because the evaluation staff designed and field tested, as well as evaluated, that unit. All other components were designed and field tested by the developmental and operational staff in each area. This outline of the objectives and products of formative evaluation is expanded in the Formative Evaluation Section below.

Of the many available definitional differences between summative and formative evaluation, none seems to be both clearly understandable and technically precise. Therefore, a distinction will be made here based upon differences that experience suggests. For the purpose of this report any evaluation activity which is related to a specific component within the program is considered formative. Any evaluation activity which concerns the project as a whole or several units in a summary fashion is considered summative. For example, a report on the Career Development Unit employing original analyses of data related to that unit, and confined to that unit, would be formative. Another report which reviewed previous analyses and documents related to the

Career Development Unit and discussed them in the context of other program units would be summative. Formative evaluation intends to inform the project staff of unit strengths and weaknesses. Formative evaluation also suggests hypotheses to be tested and problem areas to be assessed in summative evaluation. Summative evaluation intends to judge project conduct and effectiveness, and to present results for external review.

In its design the summative evaluation for FY 1974 included a summary review of the project support and management components. Those reports were considered as secondary in importance, and in some instances they served more properly as documentation rather than evaluation. The summative focus was given to the analysis of student effects. It was assumed that such effects would be a result of the instructional components or the program as a whole; instructional components were not treated individually because there were no grounds for hypothesizing mutually exclusive effects. Analyses of costs and marketability were also undertaken in the summative effort. Gathering and analyzing employer and parent perceptions of the program likewise were summative concerns. The final area of summative inquiry established was the institutional structure necessary to conduct a program of this type.

Relating to the above outline of summative concerns the following principal hypotheses were presented for testing during FY 1974:

Student Effects

1. Students will gain significantly ($p<.10$) in basic skills over the course of the year.
2. Students will gain significantly ($p<.10$) more in basic skills than comparable students in a traditional school.

3. Students will gain significantly ($p<.10$) in career maturity.
4. Students will gain significantly ($p<.10$) more in career maturity than comparable students in a traditional school.
5. Students will evidence a significantly ($p<.10$) more positive attitude toward school than students in a traditional school.
6. Students will gain significantly ($p<.10$) in career knowledge over the course of cluster experiences.

Other Effects

1. Employers will be able to provide learning experiences sufficient to meet student needs and interests.
2. Employers will evidence a positive attitude and commitment regarding the program.
3. Parents will evidence a positive attitude and commitment regarding the program.
4. Institutional structures will be established to enable the the conduct of the program.
5. It will be demonstrated that the program can be operated on on a feasible cost basis.
6. It will be demonstrated that there is a ready market for the program.

The student effects hypotheses were tested using experimental and comparison groups with instruments as discussed below in procedural sections. The design was a quasi-experimental one with non-equivalent control groups. The testing was done on a pre-post basis. The "other effects" hypotheses were not tested statistically. Rather, conclusions were drawn from field test data. Detailed results were discussed in the following summative evaluation reports:

REPORT	DATE COMPLETED
1. Report on Management Systems Components	1/2/74
2. Report on Support Systems Components	2/28/74

REPORT	DATE COMPLETED
3. Interim Evaluation Report	3/15/74
4. Book of Measures	7/30/74
5. Report on Cost and Marketability	9/30/74
6. Final Evaluation Report	9/30/74

This outline of the objectives and products of the summative evaluation is expanded in the Summative Evaluation section belc

The evaluation activities undertaken during the course of FY 1974 thus focused on the formative and summative efforts. In the formative evaluation each instructional component of the project was analyzed to provide information useful in program development and project management. Inspection of operational records, formative questionnaires and interviews provided the appropriate data. The summative evaluation was designed principally to determine the overall effects of the program on students, employers and parents. It also addressed institutional feasibility and planning issues from a program-wide perspective. Hypotheses were formulated and tested using experimental and comparison students, a pretest-posttest package, questionnaires and other less formal means of measurement. The formative and summative efforts exhibit many interrelationships. Formative analysis indicates the degree to which the program design was actually implemented. This suggests the level of summative effects to be anticipated and provides a context for their interpretation. Formative results also may suggest hypotheses to be tested in a summative design. Summative results may indicate areas of curriculum and procedure which need further development in subsequent project years.

Both the formative and summative efforts during FY 1974 resulted in extensive reports as indicated above. In addition to these, a series of Special Reports was issued.

REPORT	DATE COMPLETED
1. The Student Recruitment and Selection Process	1/30/74
2. Report on Student Characteristics	2/28/74
3. Report to Employer-Coordinators on the Results of Sixth Quarter Interviews	4/1/74
4. Report on Instructional Units for Fifth Quarter	4/1/74

Activities outside of the formative and summative plans were also undertaken. Principal among these was an extensive instrument development effort. Four instruments resulted from a cooperative process involving NIE and the evaluation staffs of the four EBCE projects:

1. Student Demographic Data Questionnaire
2. Student Opinion Survey
3. Parent Opinion Survey
4. Experience Site Demographic Data Questionnaire

These instruments were analyzed and finalized by the RBS Career Education Project evaluation staff for use by all four projects.

Two additional instruments were developed exclusively by RBS:

1. Cluster Tests of Knowledge
2. Assessment of Student Attitudes Scale

Each of these instruments along with associated analyses has been included in Appendix C of this report. In most cases the results obtained indicate that further development is required for these measures, but they functioned fairly well and are presently acceptable for use. This instrumentation effort was considerable in light of the measurement obstacles inherent in experimental programs, and it represents a substantial advance in Career Education Program assessment.

The instrumentation process occurred within the context of a broader cooperative research activity established by NIE among the evaluation staffs of the four projects. Evaluation directors and staff members visited each of the four project sites to exchange information on the projects and confer on various evaluation issues related to the Career Education Program. Joint conferences were also held at the annual meeting of the American Educational Research Association (where a symposium was also presented) and Princeton University. Continuing relationships were thus established among the individual projects and NIE. This resulted in the sharing of experience and numerous cooperative ventures.

Extensive resources were also devoted at RBS to computerized data systems development. It was attempted to design and implement automated records systems capable of managing operational tasks (e.g., attendance, grades and transcripts) as well as maintaining a comprehensive data file for evaluation and research purposes. These systems were developed to varying stages of completeness. In all cases the point of field testing was reached, but the systems were in need of further development before they could be operated by field personnel without a need for technical assistance.

In summary the evaluation activities for FY 1974 were in several major areas: formative evaluation, summative evaluation, instrument development, cooperative research and data systems development. The outcomes of these activities are presented in the remainder of this report.

II. STUDENT POPULATION

The purpose of this section of the final evaluation report is to present summary data on students who participated in the Academy for Career Education (ACE) program in FY 74 and students who were selected for comparison groups. The students in the Academy program comprised two groups:

1. ACE Group - (n = 76) These were 12th grade students who received their full high school experience at the Academy. They have been in the program since September 1972.
2. ACE-Olney - (n = 76) These were 10th and 11th grade students who participated only in the core Academy program: Career Development, Career Guidance and Basic Skills. They have their remaining courses at Olney High School, participate in Olney's extracurricular program, and will receive their diploma from Olney rather than the Academy. They started the program in September 1973.

Two additional groups of students were selected for the purpose of comparing the progress of Academy students with traditional program students. These comparison groups were selected from the Olney High School student body:

3. Comparison Group - (n = 28) These students applied for the Academy program, were accepted, but eventually declined to enroll. They were selected for comparison because they

volunteered for a career-oriented program (evidencing a level of interest), and they passed the program's requirements. They were all 11th graders.

4. Context Group - (n = 81) These student represented a random selection of equal numbers of 10th, 11th and 12th grade students from Olney High School. They were selected to provide comparative data on the "typical" Olney student.

The comparison group students were not involved in the Academy program, but were tested on the same measures as the Academy student groups.

The following instruments were included in the pretest-posttest evaluation design. All were administered to both experimental and control groups. A detailed discussion of the procedures is included in appendix B of this report.

1. Comprehensive Tests of Basic Skills (CTBS) - This is a standardized test of basic academic performance. The Reading and Arithmetic subtests were used.
2. Career Maturity Inventory (CMI) - This is a standardized test of career attitude and several areas of career-related competencies.
3. Assessment of Student Attitudes Scale (ASA) - This instrument is currently under development by the evaluation staff. It is intended to measure attitude toward school and several elements in the learning environment.
4. Student Demographic Data Questionnaire (SDQ) - This instrument was constructed by the evaluation staffs of all Experience-Based Career Education projects to provide common data on basic characteristics.

Background Characteristics

Table 1 presents several summary characteristics of the student groups involved in the FY 1974 program. At the start of the academic year each experimental group (ACE and ACE-Olney) contained 76 students.

Table 1

Composition of Student Groups

Groups / Characteristics	ACE	ACE-Olney	Comparison	Context	Total
1. Size	76	76	28	81	261
2. Average Age	17.0	15.8	16.3	16.3	16.4
3. Grade Level	12.0	10.5	11.0	11.0	11.2
4. Previous School % Attendance*	89.8	91.6	90.5	88.7	90.1
5. Previous School GPA **	3.5	3.0	3.3	3.4	3.3

ACE Group = Students originally recruited for FY 73 program, all equivalent of 12th graders, all in program for second year.

ACE-Olney Group = Student recruited for FY 74 program in cooperation with Olney High School, grade equivalent split between 10th and 11th graders, all in program for first year.

Comparison Group = Olney students who applied for ACE-Olney program, were accepted, but finally decided to not enroll.

Context Group = A random selection of equal numbers of 10th, 11th and 12th graders from Olney, no known exposure to program, no intended selection biases.

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* Data completeness = 84%, scale 0% - 100%

** Data completeness = 96%, scale 1 = high to 5 = low

The context group (randomly selected) was roughly equivalent, with 81 students, while the other experimental group (the comparison students who had opted out of the program) was much smaller with only 28 students. The total number of subjects available for analysis was 261.

Age. In age, the ACE group was approximately one year older, on the average, than the other groups. Likewise in grade level, the ACE group was approximately one level higher than the others. The ACE group consisted entirely of 12th graders. The ACE-Olney group was about evenly divided between 10th and 11th graders. The Comparison group consisted entirely of 11th graders. The Context group was divided among the three levels.

Previous School Attendance. Reported previous school attendance was uniform across groups and high (90%). It seems likely that this figure has been subjected to error somewhere along the way, but it reflects school records as accurately as they could be analyzed.

Previous School GPA. Previous school grade point average (GPA) varied slightly across groups. On a 5 point scale with 5 being low, the ACE group averaged 3.5 (C-), the ACE-Olney group averaged 3.0 (C) and the controls fell roughly in between. This would indicate that the 12th grade experimentals have a relatively poorer past school record while the 10th and 11th grade experimentals have a relatively better one. Relationships to other measures and present performance remain to be drawn.

Race and Sex. Percentage calculations on each student group are presented in Table 2. The sex distribution was roughly equitable except for the Comparison group, where females exceeded males almost 2 to 1. Racial distributions were more varied. The ACE-Olney group was preponderantly Black (81%), while the others evidenced close to a 60%-40% split. Sex by race breakdowns showed that the typical size ordering was Black Female, Black Male, White Female and White Male. The Comparison group had an unusual distributions indicate that the program is differentially attracting population subgroups. The reasons for this bear investigation. The disproportionalities also have implications for analyses to be presented in the Summative Evaluation Section.

Table 2

Sex and Race Distributions

in Percents

Group / Characteristics	ACE	ACE-Olney	Comparison	Context
Male	49	56	35	53
Female	51	44	65	47
Black	67	81	61	53
White	33	19	39	47
Black Male	30	41	17	27
Black Female	37	41	44	27
White Male	19	15	17	27
White Female	14	3	22	19

Parental Occupations. Tables 3 and 4 present the distributions of parental occupations for the various groups. No major systematic differences between groups were observed. Preponderant categories for fathers were: Operative - 33%, Craftsman - 16%, and Laborer - 13%. The largest categories for mothers were: Housewife - 42%, Clerical - 18%, Operative - 13%, and Services - 12%.

Parental Educational Levels. Tables 5 and 6 present the distributions of parental educational levels for the ACE and ACE-Olney groups. Most parents were reported to have completed some or all of secondary school. Since the levels have some scalar quality, an informal test for differences between the groups was made. The average educational level of the ACE group was 3.91 on a scale of 1 to 8 with 1 low and 8 high; the ACE-Olney average was 3.97. The groups thus seem similar with regard to parental occupation.

Post Secondary Plans. All groups were questioned about their post secondary plans. Table 7 presents this information. The two experimental groups did not seem to differ markedly with approximately 25% planning to immediately enter a vocation, over 50% planning further education, and about 10% anticipating job training. The ACE-Olney group was relatively more interested in 4 year colleges within "further education" by a margin of 35% to 22%. Of note is the wide disparity between the experimental and control groups. In the case of the latter, for Comparison and Context groups respectively, fully 50% and 40% were planning immediate entry into a job, 42% and 48% were planning further education, and very few were anticipating

Table 3

Fathers' Occupations

in Percents

Groups / Occupations	ACE	ACE-Olney	Comparison	Context	Total
1. Clerical	3.7	3.5	10.0	9.8	6.3
2. Craftsman	14.8	26.2	10.0	8.2	15.6
3. Farmer	0.0	0.0	0.0	0.0	0.0
4. Housewife	0.0	0.0	0.0	0.0	0.0
5. Laborer	20.4	12.3	5.0	8.2	12.5
6. Manager	11.1	1.8	0.0	9.8	6.8
7. Military	0.0	3.5	5.0	3.3	2.6
8. Operative	25.9	24.6	40.0	44.3	32.8
9. Professional	5.6	5.3	10.0	3.3	5.2
10. Proprietor	3.7	0.0	0.0	3.3	2.1
11. Protective	0.0	10.5	0.0	4.9	4.7
12. Sales	5.6	3.5	5.0	1.6	3.6
13. Service	3.7	5.3	15.0	3.3	5.2
14. Technical	5.6	3.5	0.0	0.0	2.6
Data Completeness	71.1	75.0	71.4	75.3	73.6

Table 4

Mothers' Occupations

in Percents

Groups / Occupations	ACE	ACE-Olney	Comparison	Context	Total
1. Clerical	9.7	20.6	25.0	20.5	18.1
2. Craftsman	0.0	3.2	0.0	0.0	0.9
3. Farmer	1.6	0.0	0.0	0.0	0.4
4. Housewife	56.5	23.7	37.5	46.1	41.9
5. Laborer	1.6	1.6	0.0	0.0	0.9
6. Manager	0.0	0.0	0.0	1.3	0.4
7. Military	0.0	0.0	0.0	0.0	0.0
8. Operative	14.5	15.9	12.5	10.3	13.2
9. Professional	9.7	11.1	8.3	3.8	7.9
10. Proprietor	0.0	1.6	0.0	1.3	0.9
11. Protective	0.0	3.2	0.0	1.3	1.3
12. Sales	3.2	0.0	0.0	2.6	1.8
13. Service	3.2	17.5	16.7	11.5	11.5
14. Technical	0.0	1.6	0.0	1.3	0.9
Data Completeness	81.6	82.9	85.7	96.3	87.0

Table 5

Fathers' Educational Level

in Percents

Level \ Group	ACE	ACE-Olney	Comparison*	Context*	Total
1. None	0.0	1.8	-	-	0.9
2. Elementary	7.3	5.5	-	-	6.4
3. Some Secondary	36.4	21.8	-	-	29.1
4. Secondary Graduate	30.9	47.2	-	-	39.0
5. Some Post-Secondary	14.5	16.4	-	-	15.5
6. College Graduate	7.3	5.5	-	-	6.4
7. Some Graduate Study	1.8	0.0	-	-	0.9
8. Advanced Degree	1.8	1.8	-	-	1.8
Data Completeness	72.4	72.4	0.0	0.0	42.2

* This item was not included in comparison or context questionnaires due to possible negative reaction.

Table 6

Mothers' Educational Level

in Percents

Level \ Group	ACE	ACE-Olney	Comparison*	Context*	Total
1. None	0.0	0.0	-	-	0.0
2. Elementary	0.0	1.6	-	-	0.8
3. Some Secondary	29.5	22.6	-	-	26.0
4. Secondary Graduate	49.2	51.6	-	-	50.4
5. Some Post-Secondary	18.0	14.5	-	-	16.3
6. College Graduate	3.3	8.1	-	-	5.7
7. Some Graduate Study	0.0	0.0	-	-	0.0
8. Advanced Degree	0.0	1.6	-	-	0.8
Data Completeness	80.3	81.6	0.0	0.0	47.1

* This item was not included in comparison or context questionnaires due to possible negative reaction.

Table 7

Post Secondary Plans

in Percents

Category \ Group	ACE	ACE-Olney	Comparison	Context	Total
1. Employment	19.4	17.6	50.0	39.2	28.3
2. Job Training	10.4	8.1	4.2	7.2	8.1
3. Military	7.5	6.5	0.0	4.3	5.4
4. Homemaker	0.0	0.0	0.0	0.0	0.0
5. Vocational School	14.9	8.1	4.2	7.3	9.5
6. 2 year academic college	13.4	6.5	4.2	1.4	6.8
7. 2 year vocational college	3.0	8.1	4.2	0.0	3.5
8. 4 year college	22.4	35.4	29.0	39.2	32.0
9. Part-time work	7.5	6.5	0.0	0.0	4.1
10. Other	1.5	3.2	4.2	1.4	2.3
Data Completeness	88.2	81.6	85.7	85.2	85.1

anything else. From these distributions it seems that, while all groups have a high incidence of planned post secondary education, the remaining control students are more interested in immediate employment than the remaining experimental subjects. The plans of ACE and ACE-Olney students were more evenly spread over the categories available (possibly indicating more diversity of interest); the Comparison and Context distributions were bimodal within the employment and further education categories.

Reasons for Academy Enrollment. Regarding reasons for Academy enrollment (Table 8), the opportunity for Career Exploration was the largest single factor for both ACE and ACE-Olney students. Individualized instruction, choice of courses, smaller classes and the opportunity to move around the city were also indicated by a substantial number of students.

Table 8

Reason for Academy Enrollment

in Percents

Group / Category	ACE	ACE-Olney	Total
1. Smaller Classes	11.7	10.7	11.2
2. Career Exploration	30.0	51.8	40.6
3. Choice of Courses	8.3	12.5	10.3
4. Opportunity to Move Around City	11.7	8.9	10.3
5. Individualized Instruction	23.3	8.9	16.4
6. Make New Friends	0.0	1.8	0.9
7. Other	15.0	5.4	10.3
Data Completeness	78.9	73.7	76.3

In investigating the Background Characteristics of Academy students and their control group counterparts descriptive statistics have been presented above. The students involved seem to be representative of an urban population. Between group differences were found on the following dimensions: race and sex composition, previous school GPA, and post secondary plans. The ACE group (12th graders) was approximately 50% - 50% in sex composition and 70% Black, but the ACE-Olney group (10th and 11th graders) was approximately 55% Male and 80% Black. In the ACE-Olney group only 2 students were White Female and only 10 were White Male. This disparity was not intended, and the reasons for its occurrence should be investigated. If the same phenomenon were to occur next year (after the 12th graders had graduated), the net result would be a program that served only one race of students. ACE students had a lower grade point average from their sending schools than did the ACE-Olney students (C- vs. C). The control group students averaged in between the experimental groups. The control group students were more interested in immediate post secondary employment than were the experimental students. The experimental students had more diversity in their planning. All groups had a high level of interest in post secondary education. In summary, the ACE-Olney group was in composition more Male and Black than the ACE group; it also had a better achievement record. Sex and racial data indicate that the Comparison Group is not a comparable control group. Both the ACE and ACE-Olney groups had more diversity of post secondary interests than the Comparison and Context groups; they also expressed less interest in immediate employment after high school.

Standardized Tests

The pretest results of the standardized tests used in the evaluation design are presented below. Posttest findings are presented in the Summative Evaluation section of this report.

Career Maturity Inventory. Tables 9 through 13 present the results of the Career Maturity Inventory pretests. In all cases percentiles were used for analysis purposes; thus grade level differences have been taken into account. Each subtest table consists of three subdivisions. The first presents basic descriptive data on each group; the groups are arranged in order of the magnitude of their mean score. The second is an analysis of variance table which indicates the degree of statistical reliability with which the largest mean can be considered different from the smallest mean. The third section indicates the statistical significance of the remaining mean differences. In all cases the numbering of means reflects the order presented in the first section of the table.

Inspection of these results allows some interesting conclusions:

1. In no case was the Comparison Group different from the Context Group (control groups)
2. In no case was the ACE Group different from the ACE-Olney Group (experimental groups)
3. In most cases both experimental groups were superior to both control groups

These findings indicated no differences between first year (ACE) and second year (ACE-Olney) students on career maturity factors as measured by the CMI. These findings also showed no differences between students who applied, were accepted, but dropped from the program (Comparison) and a random selection of students (Context). However, both of these groups were consistently lower than the experimental groups. This suggests that at least one consistent difference between students who stay in the program and other students their age is a

Table 9

Career Maturity Inventory Pretest
Attitude Scale Percentiles

Groups	N	Mean	SD	Mean Diff.
1. ACE	67	40.55	26.05	-
2. ACE - Olney	70	39.81	27.90	0.74
3. Comparison	28	26.93	25.57	13.62
4. Context	77	26.39	23.56	14.16

Analysis of Variance

	Sum of Squares	df	Mean Square	F
Between Groups	11086.79	3	3695.60	5.55
Within Groups	158365.32	238	665.40	
Totals	169452.12	241		

Confidence Level of
F (3,238) = 99.89%

Tukey Test
for Differences Between Means

Mean Diff.	1	2	3
4	14.16 *	13.42 *	0.54
3	13.62 *	12.88	
2	0.74		

Critical Value = 13.21

* p. ≤ .05

Table 10

Career Muturity Inventory Pretest

Occupational Information Subtest Percentiles

Groups	N	Mean	SD	Mean Diff.
1. ACE - Olney	69	50.16	27.28	-
2. ACE	62	46.57	25.47	3.59
3. Context	76	29.67	21.16	20.49
4. Comparison	26	28.62	24.80	21.54

Analysis of Variance

	Sum of Squares	df	Mean Square	F
Between Groups	21268.45	3	7089.48	11.67
Within Groups	139103.42	229	607.44	
Totals	160371.87	232		

Confidence Level of
F (3,229) = 99.99%

Tukey Test
for Differences Between Means

Mean Diff.	1	2	3
4	21.54 *	17.95 *	1.05
3	20.49 *	16.90 *	
2	3.59		

Critical Value = 12.95

* p < .05

Table 11

Career Maturity Inventory Pretest

Goal Selection Subtest Percentiles

Groups	N	Mean	SD	Mean Diff.
1. ACE - Olney	70	39.80	18.80	-
2. ACE	66	39.58	20.41	0.22
3. Comparison	26	25.39	20.28	14.41
4. Context	69	23.78	16.18	16.02

Analysis of Variance

	Sum of Squares	df	Mean Square	F
Between Groups	12016.48	3	4005.49	11.43
Within Groups	79551.26	227	350.45	
Totals	91567.72	230		

Confidence level of
F (3,227) = 99.99%

Tukey Test
for Differences Between Means

Mean Diff.	1	2	3
4	16.02 *	15.80 *	1.61
3	14.41 *	14.19 *	
2	0.22		

Critical Value = 9.89

* p < .05

Table 12

Career Maturity Inventory Pretest

Planning Subtest Percentiles

Groups	N	Mean	SD	Mean Diff.
1. ACE	65	44.97	26.59	-
2. ACE - Olney	70	44.90	21.04	0.07
3. Comparison	22	33.32	21.60	11.65
4. Context	56	27.57	17.79	17.40

Analysis of Variance

	Sum of Squares	df	Mean Square	F
Between Groups	12771.19	3	4257.06	9.22
Within Groups	96450.73	209	461.49	
Totals	109221.92	212		

Confidence level of
F (3,209) = 99.99%

Tukey Test
for Differences Between Means

Mean Diff.	1	2	3
4	17.40 *	17.33 *	5.75
3	11.65	11.58	
2	0.07		

Critical Value = 12.00

* p.< .05

Table 13

Career Maturity Inventory Pretest
Problem Solving Subtest Percentiles

Groups	N	Mean	SD	Mean Diff.
1. ACE - Olney	70	49.77	21.61	-
2. ACE	66	44.29	21.61	5.48
3. Comparison.	21	28.57	22.63	21.20
4. Context	53	28.32	21.31	21.45

Analysis of Variance

	Sum of Squares	df	Mean Square	F
Between Groups	17813.09	3	5937.96	12.76
Within Groups	95884.56	206	465.46	
Totals	113698.46	209		

Confidence Level of
F (3,206) = 99.99%

Tukey Test
for Difference Between Means

Mean Diff.	1	2	3
4	21.45 *	15.97 *	0.25
3	21.20 *	15.72 *	
2	5.48		

Critical Value = 12.25

* $p. < .05$

higher evidenced career maturity. This must have been a factor at work in the recruitment and selection process, and merits further study. In percentile categories the control subjects were generally close to the lowest quartile while experimental subjects were close to the middle.

Comprehensive Tests of Basic Skills. Tables 14 through 20 present the results from the Comprehensive Tests of Basic Skills in the same format used above for the Career Maturity Inventory. The Reading and Arithmetic subtests were administered. Since scale scores were available for this instrument, they were used for analysis purposes to

Table 14

CTBS Pretest

Reading Vocabulary Scale Scores

Groups	N	Mean	SD	Mean Diff.
1. ACE[1]	70	574.20	78.72	-
2. Content	81	551.57	96.71	22.63
3. ACE - Olney	73	554.58	79.94	29.62
4. Comparison	28	529.46	73.36	44.74

Analysis of Variance

	Sum of Squares	df	Mean Square	F
Between Groups	52283.06	3	17427.69	2.43
Within Groups	1781231.88	248	7182.39	
Totals	1833514.94	251		

Confidence Level of
F (3,248) = 93.39%

Tukey Test
for Difference Between Means

Mean Diff.	1	2	3
4	44.74 *	22.11	15.12
3	29.62	6.99	
2	22.63		

Critical Value = 42.89

* p. < .05

[1] 1972-1973 pretest scores used for this group to equate for age differences; all other scores are 1973-1974.

Table 15

CTBS Pretest

Reading Comprehension Scale Scores

Groups	N	Mean	SD	Mean Diff.
1. ACE[1]	70	563.06	89.46	-
2. ACE - Olney	73	539.88	79.78	23.18
3. Content	81	522.33	90.00	40.73
4. Comparison	28	512.00	95.05	51.06

Analysis of Variance

	Sum of Squares	df	Mean Square	F
Between Groups	82971.75	3	27657.25	3.61
Within Groups	1902567.66	248	7671.64	
Totals	1985539.41	251		

Confidence Level of
F (3,248) = 98.60%

Tukey Test
for Difference Between Means

Mean Diff.	1	2	3
4	51.05 *	27.88	10.33
3	40.73	17.55	
2	23.18		

Critical Value = 44.31

* p. < .05

[1] 1972-1973 pretest scores used for this group to equate for age differences; all other scores are 1973-1974.

Table 16

CTBS Pretest

Reading Total Scale Scores

Groups	N	Mean	SD	Mean Diff.
1. ACE[1]	70	568.06	87.53	-
2. ACE - Olney	73	539.21	78.27	28.85
3. Contest	81	536.25	87.58	31.81
4. Comparison	28	517.75	83.41	50.31

Analysis of Variance

	Sum of Squares	df	Mean Square	F
Between Groups	66349.66	3	22116.55	3.10
Within Groups	1771246.00	248	7142.12	
Totals	1837595.66	251		

Confidence Level of
F (3,248) = 97.25%

Tukey Test
for Difference Between Means

Mean Diff.	1	2	3
4	50.31 *	21.46	18.50
3	31.81	2.96	
2	28.85		

Critical Value = 42.76

* p. < .05

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[1] 1972-1973 pretest scores used for this group to equate for age differences; all other scores are 1973-1974.

Table 17

CTBS Pretest

Arithmetic Compulation Scale Scores

Groups	N	Mean	SD	Mean Diff.
1. ACE[1]	71	511.97	74.51	-
2. Comparison	28	510.57	80.08	1.40
3. Contest	80	502.14	93.99	9.83
4. ACE - Olney	73	496.81	71.93	15.16

Analysis of Variance

N.S.

	Sum of Squares	df	Mean Square	F
Between Groups	9751.48	3	3250.49	0.49
Within Groups	1632147.60	248	6581.24	
Totals	1641899.08	251		

Confidence Level of
F (3,242) = Not Computed

Tukey Test
for Difference Between Means

N.S.

Mean Diff.	1	2	3
4	15.16	13.76	5.33
3	9.83	8.42	
2	1.40		

Critical Value = 41.03

* p. < .05

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[1] 1972-1973 pretest scores used for this group to equate for age differences; all other scores are 1973-1974.

Table 18

CTBS Pretest

Arithmetic Concepts Scale Scores

Groups	N	Mean	SD	Mean Diff.
1. ACE[1]	71	531.97	80.25	-
2. Comparison	28	531.25	76.17	0.72
3. Content	80	514.83	84.77	17.14
4. ACE - Olney	73	513.66	79.61	18.31

Analysis of Variance

	Sum of Squares	df	Mean Square	F
Between Groups	18469.68	3	6156.56	0.94
Within Groups	1631467.18	248	6578.50	
Totals	1649936.86	251		

N.S.

Confidence Level of
F (3,248) = Not Computed

Tukey Test for Difference Between Means

Mean Diff.	1	2	3
4	18.31	17.59	1.17
3	17.14	16.42	
2	0.72		

N.S.

Critical Value = 41.03

* p.< .05

[1] 1972-1973 pretest scores used for this group to equate for age differences; all other scores are 1973-1974.

Table 19

CTBS Pretest

Arithmetic Applications Scale Scores

Groups	N	Mean	SD	Mean Diff.
1. ACE[1]	71	523.27	87.65	-
2. ACE - Olney	72	517.03	92.89	6.24
3. Content	80	509.14	85.80	14.13
4. Comparison	28	481.57	112.51	41.70

Analysis of Variance

	Sum of Squares	df	Mean Square	F
Between Groups	37388.66	3	12462.89	1.48
Within Groups	2073692.20	247	8395.52	
Totals	2111080.86	250		

N.S.

Confidence Level of
F (3,247) = 78.07%

Tukey Test for Difference Between Means

Mean Diff.	1	2	3
4	41.70	35.46	27.57
3	14.13	7.89	
2	6.24		

N.S.

Critical Value = 46.40

* p.< .05

[1] 1972-1973 pretest scores used for this group to equate for age differences; all other scores are 1973-1974.

Table 20

CTBS Pretest

Arithmetic Total Scale Scores

Groups	N	Mean	SD	Mean Diff.
1. ACE[1]	71	517.06	77.04	-
2. Comparison	28	504.54	74.08	12.52
3. Context	80	503.18	94.81	13.68
4. ACE - Olney	72	498.36	76.63	18.70

Analysis of Variance

	Sum of Squares	df	Mean Square	F
Between Groups	32303.42	3	10767.51	1.08
Within Groups	2467073.27	247	9988.15	
Totals	2499376.69	250		

N.S.

Confidence Level of
F (3,247) = Not Computed

Tukey Test
for Difference Between Means

Mean Diff.	1	2	3
4	18.70	6.13	5.02
3	13.68	1.16	
2	12.52		

N.S.

Critical Value = 43.80

* $p. < .05$

[1] 1972-1973 pretest scores used for this group to equate for age differences; all other scores are 1973-1974.

increase discrimination and accuracy. Grade equivalents are reported in the text for descriptive purposes. Since scale scores do not equate for age, the ACE group's pretest scores for last year were employed in this analysis.

The statistical procedures demonstrated no significant differences between groups on the Arithmetic subtests. However, on each of the Reading subtests the ACE group was significantly superior to the Comparison group. The implications of this single comparative difference are not easy to draw, but it seems clear that the ACE students upon entrance to 11th grade were better in reading skills than the students who applied but dropped one year later. The lack of other significant differences would suggest that any other group comparisons relating to basic skills could be made assuming an initial equality of group achievement.

Grade equivalent averages for each group are presented in Table 21. As can be seen, most groups were functioning at the 7th or 8th grade level on the average. Arithmetic scores were generally lower than Reading scores. All groups ranged on all measures from a low of the 3rd grade level to a high of the 12th grade level. From these low scores it is apparent that basic skills improvement is a priority need for these students.

Table 21

CTBS Pretest

Reading and Arithmetic Mean Grade Equivalents

Group / Test	ACE[1]	ACE-Olney	Comparison	Context	Total
Reading					
Vocabulary	9.2	8.5	7.9	8.6	8.7
Comprehension	8.7	8.1	7.1	7.5	8.0
Total	8.8	8.3	7.5	8.3	8.4
Arithmetic					
Computation	7.8	7.4	7.6	7.5	7.6
Concepts	8.3	7.7	7.9	8.0	8.0
Application	7.8	7.5	8.4	7.5	7.6
Total	7.9	7.4	7.5	7.4	7.6

[1] 1972-1973 pretest scores used for this group to equate for age differences; all other scores are 1973-1974.

Assessment of Student Attitudes Survey. The Assessment of Student Attitudes Scale is not properly a standardized instrument, but rather a measure which has been given much developmental attention by the evaluation staff. It is included in this section because it is a part of the pretest-posttest package aimed primarily at summative evaluation.

The Assessment of Student Attitudes Scale was designed specifically to measure student attitudinal dimensions in several areas central to the instructional process. These areas have been designated as subtests with separate scores as follows:

1. Education in General
2. Program Curriculum
3. School Facility
4. Program Counseling

The instrument is intended to measure student attitude toward the school program with reference to each of the areas listed above. The instrument is generalized in content and phraseology to be applicable in public schools as well as alternative or experimental programs. Extensive reliability, validity and discrimination value studies have been conducted; the preliminary results of these studies are included in appendix C of this report.

Tables 22 through 26 present the results from pretest analyses of each ASA subtest. The tables have been formatted in the same manner as those reported above for the Career Maturity Inventory and the Comprehensive Tests of Basic Skills. Data are reported as raw scores reduced to a mean on a scale from 1 (low) to 5 (high). As can be seen from these results only one difference between groups was found to be significant; that was between the ACE and ACE-Olney groups on the Attitude Toward Program Resources Subtest. All groups were found to be not different on all other subtest measures. It is apparent that

Table 22

ASA Pretest

Education Subtest Raw Scores

Groups	N	Mean	SD	Mean Diff.
1. ACE	56	3.49	.55	-
2. ACE - Olney	52	3.46	.64	.03
3. Comparison	28	3.42	.83	.07
4. Context	80	3.41	.64	.08

Analysis of Variance

N.S.

	Sum of Squares	df	Mean Square	F
Between Groups	2555.34	3	851.95	0.20
Within Groups	887698.15	212	4187.26	
Totals	890253.98	215		

Confidence Level of
F (3,212) = Not Computed

Tukey Test
for Difference Between Means

N.S.

Mean Diff.	1	2	3
4	.08	.05	.01
3	.07	.04	
2	.03		

Critical Value = 0.35

* $p. < .05$

Table 23

ASA Pretest

Program Curriculum Subtest Raw Scores

Groups	N	Mean	SD	Mean Diff.
1. ACE	56	3.48	.60	-
2. Comparison	28	3.46	.68	.02
3. Context	80	3.41	.59	.07
4. ACE - Olney	52	3.31	.61	.17

Analysis of Variance

N.S.

	Sum of Squares	df	Mean Square	F
Between Groups	8638.54	3	2879.51	0.77
Within Groups	792636.11	212	3738.85	
Totals	801274.65	215		

Confidence Level of
F (3,212) - Not Computed

Tukey Test
for Difference Between Means

N.S.

Mean Diff.	1	2	3
4	.17	.15	.10
3	.07	.05	
2	.02		

Critical Value = 0.33

* $p. < .05$

Table 24

ASA Pretest

Program Resources Subtest Raw Scores

Groups	N	Mean	SD	Mean Diff.
1. ACE	56	3.64	.63	-
2. Context	80	3.36	.59	.28
3. Comparison	28	3.32	.74	.32
4. ACE - Olney	52	3.25	.67	.39

Analysis of Variance

	Sum of Squares	df	Mean Square	F
Between Groups	46690.93	3	15563.64	3.78
Within Groups	873276.61	212	4119.23	
Totals	919967.54	215		

Confidence Level of
F (3,212) = 98.86%

Tukey Test
for Difference Between Means

Mean Diff.	1	2	3
4	.39 *	.11	.07
3	.32	.04	
2	.28		

Critical Value = 0.34

* p. < .05

Table 25

ASA Pretest

Program Counseling Subtest Raw Scores

Groups	N	Mean	SD	Mean Diff.
1. ACE	56	3.24	.88	-
2. Context	80	3.00	.83	.24
3. ACE - Olney	52	2.86	.91	.38
4. Comparison	28	2.86	.88	.38

Analysis of Variance

N.S.

	Sum of Squares	df	Mean Square	F
Between Groups	47223.23	3	15741.08	2.09
Within Groups	1597083.73	212	7533.41	
Totals	1644306.96	215		

Confidence Level of
F (3,212) = 89.74%

Tukey Test
for Difference Between Means

N.S.

Mean Diff.	1	2	3
4	.38	.14	.00
3	.38	.14	
2	.24		

Critical Value = 0.46

* p. < .05

Table 26

ASA Pretest

Total Raw Scores

Groups	N	Mean	SD	Mean Diff.
1. ACE	56	3.51	.49	-
2. Context	80	3.36	.53	.15
3. Comparison	28	3.34	.64	.17
4. ACE - Olney	52	3.29	.54	.22

Analysis of Variance

N.S.

	Sum of Squares	df	Mean Square	F
Between Groups	14652.05	3	4884.02	1.71
Within Groups	606434.72	212	2860.54	
Totals	621086.77	215		

Confidence Level of
F (3,212) = 83.35%

Tukey Test
for Difference Between Means

N.S.

Mean Diff.	1	2	3
4	.22	.07	.05
3	.17	.02	
2	.15		

Critical Value = .35

* $p. < .05$

all student groups are similar with regard to attitude toward school as measured by the RBS-designed Assessment of Student Attitude Scale.

The following summarizes between group differences found in the analysis reported above:

1. CTBS Reading — ACE > - Comparison -
2. CMI (most subtests*) — ACE = ACE-Olney > Comparison = Context
3. ASA (subtest 3) — ACE > ACE-Olney

In all other comparisons the groups were found to be statistically not different.

Experimental groups (ACE and ACE-Olney) were superior to control groups (Comparison and Context) on most subtests of the Career Maturity Inventory with average percentiles of approximately 40 vs. 25. On the

Comprehensive Tests of Basic Skills all groups were statistically similar, except that the ACE student group was superior to the Comparison student group. Student scores ranged from the 3rd grade level to the post 12th grade level with most averages around the 7th or 8th grade equivalency. The Assessment of Student Attitude Scale results indicated that all groups were similar, except that the ACE group was superior to the ACE-Olney group on the Attitude Toward Program Resources subscale.

Summary

This section of the final report has presented information on the characteristics of students involved in the RBS Career Education Program during FY 1974. There were two experimental groups enrolled in the Academy for Career Education: the ACE group of second year students and the ACE-Olney group of first year students. There were also two comparison groups who participated in a traditional school program but were given the same tests as experimental students within the evaluation design. These groups were a Comparison group of students who had applied to the program and a Context group of randomly selected high school students.

All groups were given a battery of four pretest instruments: the Student Demographic Data Questionnaire (SDQ), the Comprehensive Tests of Basic Skills (CTBS), the Career Maturity Inventory (CMI), and the Assessment of Student Attitude Scale (ASA).

The SDQ indicated that the four groups were fairly similar in constitution as judged by background characteristics. It was found that experimental groups tended to have more diverse post-secondary plans than control groups. Some differences in past school performance were evident. It was also apparent that over the first two years of program operations a trend toward a Black student population has been in effect.

The CMI revealed that experimental groups were generally superior at entry to control groups on career maturity factors as measured by this instrument. This presents a consideration for subsequent analyses and suggests the incurrence of a selection bias.

The CTBS results did not indicate consistent differences between groups at the pretest time. The ASA likewise did not support any consistent differences between experimental and control groups.

The findings presented in this section concern only the pretest administration of evaluation instruments. These results are intended for descriptive use in viewing the samples involved in the study. For posttest results and application of analyses intended to depict program effects see the Summative Evaluation Section below.

III. FORMATIVE EVALUATION

Introduction

The formative evaluation was designed to gather information useful for program development and project management. Only the components directly related to the provision of instruction were included in the formative evaluation design; they were the Career Development Unit, the Career Guidance Unit and the Basic Skills Unit. Issues discussed in each of the evaluation unit's task reports will be summarized in this section and new data will be introduced where it is available. In addition to these issues, a final section which endeavors to discuss how the formative evaluation was used in program redirection and redesign will be included.

Career Development Unit

Overview. The following tasks were performed in the evaluation of the Career Development Unit in FY 1974.

1. Evaluate the employer contact process;
2. Assess the nature and extent of employer involvement;
3. Evaluate employers' curriculum;
4. Evaluate integration of employers' activities within clusters;
5. Determine adequacy of potential employer pool in relation to student needs;
6. Identify student needs and interests;
7. Measure levels of student knowledge in relation to goals and objectives; and
8. Survey student attitudes regarding offerings.

Tasks 1-4 were documented in Task Report 10C1/11C1; tasks 5-8 were documented in Task Report 10C1b/13C1. Following are the summarized findings of each of the evaluation tasks.

Task 1 - Evaluate Employer Contact Process. The employer contact process utilized for soliciting new employers into the Academy program was found to be effective in obtaining an employer pool for career explorations and specializations. The Greater Philadelphia

Chamber of Commerce was given the major responsibility for contacting employers and serving as a liaison between the economic sector and the Career Education Project.

Procedures developed for the identification and recruitment of employers for participation in the Career Exploration program fell into three phases. Phase one consisted of the actual identification and recruitment of potentially involved employers. Phase two involved the securing of a commitment to develop a program in Career Education. Phase three consisted of the operationalization of the Employer Program Development Plan. Detailed descriptions of each of these phases and of this process may be found in Task Reports 10A1 and 10C1b.

Sixty-seven (67) employers participated in the Career Exploration program in FY 1974. Of these, 40 or 60% were newly recruited. These 67 employers were used to provide 14 exploration clusters in the Fifth and Seventh Quarters and 16 in the Sixth Quarter. For a complete list of these employers see Task Report 10C1a/11C1.

The procedures developed for the identification, contacting and recruitment of employers for participation in the Career Specialization program were similar to those used in the Career Exploration program except that the student had the prime responsibility, in concert with his counselor-coordinator, in contracting for his learning experience. A total of 40 career specializations were provided by 23 employers during FY 1974. A list of these employers and specializations is presented in Task Report 10C1a/11C1.

Task 2 - Assess the Nature and Extent of Employer Involvement. The Career Development programs were implemented in employer, union and agency settings; all three were considered as employers. In FY 1974 a total of 84 employers (an increase of 83% over FY 1973) participated in the Career Development program. Following is a breakdown of that particpation in both years by instructional component.

Instructional Component	FY 1973	FY 1974
Career Exploration Only	31	60
Career Specialization Only	7	14
Career Exploration and Career Specialization	8	10
TOTAL:	46	84

In addition to this instructional involvement, employers constituted 55% (11 of 20 seats) of the total composition of the Board of Directors of the Academy for Career Education, the policy setting organ of the Career Education program. A further level of employer involvement included their recruitment of employers and students for participation in the Career Education Program.

Task 3 - Evaluate Employer's Curriculum. The curriculum of the Career Exploration program consisted of the instructional materials and strategies implemented in employer courses. The fact that less than half of the Career Exploration courses produced Employer Course Plans weakened the evaluation effort considerably. In addition, where Employer Course plans were extant, they were in most cases not based upon site analyses.

The Employer Course Plans which were submitted for evaluation were found to be well sequenced and well related to the learning objectives of the course where those objectives were specified. However, the specificity with which those objectives were stated was found to be low.

The curriculum for the Career Specialization program consisted of the experiences specified in the individual contracts. Within the context of the goals and objectives of the Career Specialization program, each participating student and an employer representative developed a program that met with their mutual approval. Each contract was to describe the specific learning experiences agreed upon by the student and the participating employers and approved by the Counselor-Coordinator. The contract was to include a description of (1) instructional objectives, (2) instructional activities, (3) a management plan specifying times and locations for the instructional activities, (4) a means of evaluating the student's learning, and (5) the responsibilities of all parties to the agreement.

Contracts existed for only 23 of the career specializations. Positive ratings by the evaluator of the contracts as curriculum descriptors were the relatedness of learning activities to objectives and the inclusion of statements of objectives and learning activities. Negative ratings included the specificity of the statement of objectives and the lack of a specified sequencing of learning activities. Identical contracts were noted for many career specializations for which there was multiple participation. It was questioned whether this duplication was compatible with the program goal of individualization of programs to meet each student's needs and whether students were actually participating in the contracting process.

Task 4 - Evaluate Integration of Employers' Activities Within Clusters. Although cluster meetings were held to aid in the review of program objectives, the establishment of cluster objectives and the implementation and planning of programs, these efforts were seen as having been minimally effective by Employer-Coordinators and Counselor-Coordinators.

Task 5 - Determine Adequacy of Potential Employer Pool in Relation to Student Needs. Two criteria were used to evaluate the adequacy of the employer pool in relation to the student population of the Academy for Career Education, student needs and student interests.

In the Career Exploration program student needs were determined by the program requirements of 6 career explorations and prior participation. To meet student needs, the employer pool had to accommodate 125 students in the Fifth Quarter, 92 students in the Sixth Quarter, and 84 students in the Seventh Quarter. No Career Explorations were offered in the Eighth Quarter (Summer session). The student capacity of the Career Exploration program was 160, 172, and 152 students in the Fifth, Sixth and Seventh Quarters respectively.

Student interests in the Career Exploration program were determined prior to registration and recorded on the Student Needs and Interest Form. These forms were available only for twelfth grade students in the Sixth Quarter and for all but newly enrolled students in the Seventh Quarter. When actual enrollments were matched against stated preferences for clusters, the ability of the pool to meet student interests was 90% in the Sixth Quarter and 83% in the Seventh Quarter. A complete discussion and presentation of data may be found in Task Report 10C1b/13C1.

Since career specializations are optional, student needs were defined by student interests. As in the Career Exploration program, student interests were elicited through the use of the Student Needs and Interests Form.

For the Sixth Quarter, 35 twelfth grade students expressed an interest in particpating in career specializations. Among the career area in which interest was expressed were auto mechanics, child care worker, commercial artist, computers, electrician, insurance, law, medical secretary, physical therapy, social work, teacher's aide, and travel agent.

For the Seventh Quarter, 37 twelfth grade students and 11 tenth and eleventh grade students expressed an interest in participating in a career specialization. Among the career areas in which interest was expressed were art, bookkeeping, carpentry, electrician, government, hospital work, journalism, retailing, tutor, and veterinary medicine.

In the Sixth Quarter, 22 career specializations were provided; 19 of these were provided to twelfth grade students. Thirty-five (35) twelfth grade students had expressed an interest in career specialization; 13 or 37.1% were successfully placed in career specializations. Another 6 twelfth grade students who expressed an interest after the preregistration period were also successfully placed in career specializations. Of the 35 students requesting career specializations in the Sixth Quarter, 22 were not placed.

In the Seventh Quarter, 11 tenth and eleventh grade and 37 twelfth grade students had expressed an interest in career specialization. Of these no tenth and eleventh grade and 10 or 27.2% of the twelfth grade students were placed in career specializations. Thus all 11 tenth and eleventh grade students and 27 twelfth grade students expressing interest in career specialization were not placed.

The employer pool was not yet sufficiently developed to provide career specializations in the quantity necessary to meet student needs. Career Specializations could be arranged for only 23 of the 83 students who expressed interest in such an experience. While the Counselor-Coordinator responsible for this program reported that many of these students changed their minds either before or after contacts had been made with employers, he also stated that in the case of 21 students employers could not be obtained. Thus, at best, only 23 of 44 or 52.3 % of the known, unchanged requests could be met over the two quarter period.

Task 6 - Identify Student Needs and Interests. As determined through the administration and analysis of the Student Needs and Interests Form, the capacity of the Career Exploration program necessary to meet minimal student needs in FY 1974 was 125 students in the Fifth Quarter, 92 students in the Sixth Quarter and 84 students in the Seventh Quarter.

Student interests, as indicated on the above mentioned forms, were as follows:

Table 27

Preference for Career Exploration Clusters

Sixth Quarter

Twelfth Grade Students Only

Cluster	Preference 1st	2nd	3rd	4th	5th	Total
1. Apparel	2	2	1	0	2	7
2. Art	0	0	0	0	0	0
3. Chemistry	0	0	0	0	0	0
4. Communications	3	6	0	1	2	12
5. Construction and Trades	8	2	2	1	1	14
6. Education	3	1	2	1	0	7
7. Finance	2	4	4	1	0	11
8. Government	0	1	2	1	0	4
9. Health	4	2	0	1	1	8
10. Labor	1	0	0	1	0	2
11. Manufacturing	4	3	3	2	0	12
12. Marketing	3	3	1	0	1	8
13. Personal Services	2	2	1	2	1	8
14. Research	5	3	2	1	0	11
15. Transportation	6	3	0	0	0	9
16. Utilities	2	0	3	1	1	7
Totals	45	32	21	13	9	99

Table 28

Preference for Career Exploration Clusters

Seventh Quarter

All Students

Cluster	Preference 1st	2nd	3rd	4th	5th	Total
1. Apparel	7	5	3	2	1	18
2. Art	1	2	1	0	0	4
3. Chemistry	8	1	0	0	0	9
4. Communications	15	8	9	0	1	33
5. Construction and Trades	6	1	1	0	0	8
6. Education	1	3	3	1	0	8
7. Finance	4	3	6	4	0	17
8. Government	3	3	5	0	0	11
9. Health	4	3	1	2	2	12
10. Labor	0	5	1	1	0	7
11. Manufacturing	2	5	2	3	1	12
12. Marketing	2	1	0	1	4	8
13. Personal Services	6	3	3	0	0	12
14. Research	4	4	3	1	0	12
15. Transportation	10	9	4	4	0	27
16. Utilities	1	3	2	2	0	8
Totals	74	59	44	20	9	205

A full discussion of these results may be found in Task Report 10C1b/13C1.

Task 7 - Measure Levels of Student Knowledge in Relation to Goals and Objectives. In relation to the Career Exploration courses, measures of student knowledge met with limited success in FY 1974. A staffing problem within the evaluation unit mitigated against the development of cluster tests of knowledge as had been previously planned. The Career Maturity Inventory (CMI) was administered and the results are discussed in the summative section of this report. While there were decreases in average grades in Career Exploration courses, it was not determined if this reflected adversely on student career knowledge or was attributable to other factors (poor attendance, etc.).

A measure of student knowledge in Career Specializations was the ability of the students to list job skills they had learned and academic skills that were needed in the career area. The Career Specialization Student Questionnaire was given to the 22 students who participated in career specializations in the Sixth Quarter; 15 students completed the questionnaire for a 68.2 percent rate of return. Of these, 12 or 80.0% listed specific job skills they learned about in their career specializations; 10 students or 66.7% listed specific academic skills that were needed in the career area.

The average grades earned for career specializations were also inspected. In the Fifth Quarter, the average grade was slightly below a B; in the Sixth Quarter the average was a B+. Grades seem to indicate the students are learning at or above a B level.

The responses on the Career Specialization Student Questionnaire indicated that most students learned about specific job skills in the career area of their specialization but that in a third of the cases they could not relate academic skills to proficiencies needed in the career area. Grades earned were in the good to excellent range and indicated that students were learning a great deal in the career specializations.

Task 8 - Survey Student Attitudes Regarding Offerings. Student attitude and opinion in the Career Development Unit was assessed through the administration and analysis of the Student Opinion Survey, the Career Exploration Student Questionnaire and the Career Specialization Student Questionnaire. As measured by the Student Opinion Survey, the student sense of welcome at employer sites was especially positive, while ratings for feedback from employers to students were low. As measured by the Career Exploration Student Questionnaires, students' overall ratings of the employer courses were generally high. Students were especially impressed with the amount of interest Employer-Coordinators evidenced in giving the courses. Student reaction was mixed as to their being allowed "hands on" experience, and negative in regard to the sites as being places where they might like to work.

Student attitudes toward career specialization was especially positive. Students indicated that they had a good deal of "hands on" experience in the program and that they were given assistance in making a career choice. For a complete discussion and presentation of data concerning student opinion of the Career Development Unit see Task Report 10C1b/13C1.

Career Guidance Unit

Overview. The following tasks were performed in the evaluation of the Career Guidance Unit in FY 1974.

1. Determine effectiveness of Career Guidance Groups in conveying Career Knowledge;
2. Ascertain the composition and utilization of the Needs Research and Personal Position Audit;
3. Survey staff and student attitudes toward Transactional Activities;
4. Evaluate student outcomes of Placement Program; and
5. Analyze case studies of student career development.

Tasks 1-3 were documented in Task Report 12dC1; tasks 4 and 5 were documented in Task Report 12fC2. Following are the summarized results of each of the evaluation tasks.

Task 1 - Determine Effectiveness of Career Guidance Groups in Conveying Career Knowledge. Three direct measures of student career knowledge were used in FY 1974, the Tenth/Eleventh Grade Guidance Group Questionnaire, the Twelfth Grade Guidance Group Questionnaire, and the Career Maturity Inventory. The first two instruments were designed by the evaluation staff to measure how effectively the Guidance Groups conveyed career knowledge to the combined tenth and eleventh grade and the twelfth grade students. Separate curricula were designed for these two groups because of differences in instructional emphasis. The Career Maturity Inventory is a standardized test which was chosen as a common measure of career maturity and knowledge by the evaluation staffs of the Experience-Based Career Education Projects.

The combined tenth/eleventh grade and twelfth grade Guidance Group Questionnaires were administered to a 15% random sample (n = 20, 10 students in each group) between March 6th and March 13th, 1974. These instruments were designed to determine what sorts of knowledge the Academy students had been gaining in their Guidance Groups relative to the curricula developed by the Career Guidance staff. The Guidance Group Questionnaires were developed from, and in concert with, the objectives of the Guidance Group curricula designed by the developmental staff of the Career Guidance Unit. The curriculum developed for the twelfth grade students placed the greatest emphasis on skills such as resume writing, standardized testing rationale, goal setting, and the preparation of employment applications. The objective curriculum developed for the combined tenth/eleventh grade students placed the greatest emphasis on standardized testing rationale, future studies, knowledge of the Academy program, and the differences between fact, value and opinion.

The tenth/eleventh grade random sample students who were administered the Guidance Group Questionnaire (n = 10) exhibited the ability to differentiate between values, facts, and opinions. In addition, they were able to identify the Academy's computerized career information system by its acronym. The students were not able, on the whole, to identify basic operational facets of the one program element (Life Skills Specialization) included in the questionnaire. This material was expressly included in the instructional materials for the Sixth Quarter because of the small percentage (4%) of students who took advantage of the Life Skills Specializations in the Fifth Quarter. Questions dealing with standardized tests, Life Skills Specializations, and future studies yielded mixed, but generally poor, results. The students showed a general understanding of the material but did poorly on the more specific items.

The twelfth grade random sample students (n = 10) exhibited contrasting levels of ability as measured by the Guidance Group Questionnaire. On the one hand they were able to identify the correct responses to the multiple choice items dealing with a resume; but were on the other hand incapable of correcting the letter of application. While the students were able to identify which standardized tests they had taken during the year, they could not identify the correct response concerning the rationale for standardized testing. Eighty percent (80%) of the sample were able to identify the acronym of the computerized career information system, but only 50% of the sample knew how to use the system. This indicated a general failure to apply, or adequately comprehend, the material which was emphasized in the Guidance Groups.

Task 2 - Ascertain the Composition and Utilization of the Needs Research and Personal Position Audit. The Needs Research and Personal Audit was an instructional, guidance oriented activity which took place in the tenth/eleventh grade Guidance Groups in the Fifth Quarter of Academy operations. The composition of the Needs Research and Personal Position Audit was determined, by inspection of Task Report 12bA1 and 12bA2, to consist of the following instructional units:

1. For Your Information
2. Standardized Tests
3. Holland Self-Directed Search
4. SRA Materials
5. Self-Assessment
6. The Year Two Thousand
7. Personal Goal Setting
8. Action Plan

The utilization of the Needs Research and Personal Position Audit was determined by an examination of Group Guidance Reports and Student Portfolios. The former were reporting forms intended to aid in the Counselor-Coordinators' evaluation of curricular content, student attendance and student participation as they related to the Guidance Groups. The latter were folders containing the students' completed work in the Career Guidance Unit. The Group Guidance Reports were examined in order to determine whether or not the Counselor-Coordinators reported each of the 8 instructional areas as having been implemented. A random sample (roughly 15%) of the tenth/eleventh graders' portfolios was examined in order to determine how many of the instructional units were represented by corresponding student worksheets.

In a majority of cases (67%) the Group Guidance Reports were not completed and returned to the developmental staff of the Career Guidance Unit by the Counselor-Coordinators. None of the Student Portfolios was found to be complete, 30% were reasonably complete (75% or more of the materials were present), 50% were incomplete (0%-50% of the materials were present), and 20% were not available. In total, a majority (55%) of the materials necessary for completeness were missing from the portfolios. Due to inadequate, and in some cases nonexistent, documentation it was impossible to determine the utilization of the Needs Research and Personal Position Audit.

Task 3 - Survey Staff and Student Attitudes Toward Transactional Activities. The intent of the Transactional Activities component of the Career Guidance Unit has been described (in Task 12dA1) as the involvement of the participating student "with the widest array of significant people, objects, and events in volunteer service in a social community agency." Students who chose to become involved in this aspect of the program enrolled in a Life Skills Specialization. The student who did enroll in these courses then entered into a contractual agreement with his Counselor-Coordinator and a representative of the agency where he elected to particpate in voluntary service.

Student evaluations of Life Skills Specializations were obtained from the Student Opinion Survey (Appendix C). The Agency Representatives responsible for the instruction and supervision of Academy students enrolled in Life Skills Specializations were asked to evaluate their student(s) on a Student Evaluation Form provided by the Counselor-Coordinator who was given the responsibility of conducting the Life Skills Specialization program. These forms asked for an evaluation of the student on criteria such as attendance, promptness, acceptance of responsibility, assistance of others, and the demonstration of initiative.

When students were asked to rate their Life Skills Specializations from 1 (Very Poor) to 5 (Very Good) the mean response of the 6 students then enrolled in Life Skills Specializations was 3.5 (generally positive). The small number of students actually enrolled in this component of the Career Guidance Unit in the Fifth Quarter made it impossible to generalize what sort of response would be provided by a greater student enrollment of known representativeness. In the Sixth Quarter the Student Opinion Survey was not administered. Since no appreciably greater number of students enrolled in Life Skills

Specializations in the sixth quarter, no special attempt was made to obtain student evaluation.

The data obtained from the Student Evaluation Forms made it apparent that the Agency Representatives had positive associations with their students, However, the small number of students enrolling and being evaluated for their participation, in the program made it impossible to evaluate the instructional staff's perceptions of their Life Skills Specializations students meaningfully.

Task 4 - Evaluate Student Outcomes of Placement Programs. Information regarding the student outcomes of placement programs may be found in the Summative Evaluation section of this report.

Task 5 - Analyze Case Studies of Student Career Development. In order to obtain a subjective measure of student perception of the expressed goals of the Academy program, a case-study format was decided upon as an appropriate evaluation method. It was felt that the use of a case-study approach might uncover programmatic strengths and weaknesses which would otherwise go undetected by the more traditional objective measures commonly used in program evaluation. It was decided that the approach used would encompass demographic data, standardized testing results, curricula data (courses, grades, attendance, etc.) and a structured interview for each of the students studied.

The results of the case study interviews will be presented in two forms. First, the data from a 15% random sample group will be analyzed and applied to the three units of the Academy program, i.e., Basic Skills, Career Development and Career Guidance. In addition, data concerning general student attitudes and opinion toward the Academy experience overall will be summarized. Second, two case studies will be presented in narrative form encompassing data from the Case Study Interview and pertinent academic, demographic and attitudinal data which are available from student records. The evaluation of the case study interviews indicates that there was strong student support of two of the Academy program's three units, Basic Skills and Career Development; and negligible support for the third, Career Guidance. The various ways in which students perceived the Academy experience to be valuable, or in some cases irrelevant, will be discussed below by instructional unit.

Basic Skills Unit. The random sample students who participated in the case study interviews felt that the most beneficial aspects of the Basic Skills Unit's Individualized Learning Center involved their learning to work at their own pace and learning to accept responsibility. A majority of the students interviewed indicated that they viewed their ILC experiences as helpful in what they are doing or plan to do in the future and a significant percentage of the students felt that the ILC was the best part of the Academy program. In light of the indicated support of the activities of the Basic Skills Unit by these students and the measurable increases in Reading and Arithmetic scores as evidenced by the Comprehensive Tests of Basic Skills (see Special Report 3, Interim Evaluation Report) it can be said that the Individualized Learning Center program was a valuable component of the

Academy experience.

Career Development Unit. A majority of the interviewed students indicated that they perceived the Career Exploration program as the best part of the Academy program. Rather than presenting them with vicarious learning experiences, the explorations gave the students experiences in what they described as the "real world." This comment was pervasive in the interviewed students' evaluation of the Career Exploration program. In addition, students indicated that because of their exposure to different sorts of work environments they were able to make definite appraisals of whether or not they would enjoy working in such an environment. Majorities of the interviewed students named their Career Explorations as the most interesting and/or the most worthwhile of their Academy activities. A general feeling one received from the case study interviews is that in many cases the career explorations were seen as the Academy program. In terms of student support the Career Exploration program appeared to be strong and viable. Student comments concerning the Career Specialization program reflected confusion primarily.

Career Guidance Unit. Student appraisal of the Career Guidance Unit was marked by apathy, and in some cases, hostility. Of those who indicated that there were some things they did not like about the Academy program, 75% indicated that they did not like their Guidance Groups. Nearly half of the interviewed students felt that they learned nothing as a result of their guidance activities. Two-thirds of the interviewed students felt that the guidance activities had been the least worthwhile of all the Academy activities, and half of the students who suggested improvements in the Academy program indicated that those improvements should be made in the guidance activities. Specific complaints registered by the students dealt with the perceived irrelevance of the guidance materials to the other components of the Academy program and disorganized guidance groups. It is evident from these sorts of responses that the guidance activities must be re-examined, with student input wherever possible, in order to make them more germane to both programmatic and student needs.

Overall Academy Experience. Student opinion of the overall Academy experience was generally favorable. The interviewed students felt that they were better equipped to handle work experiences because of their participation in the Academy program. A majority of the students felt that their career goals and interests had changed as a result of new information that the program had provided. Only one student indicated that he would not re-enroll in the program if he had it to do over again. The students who indicated that they were not sure if they would re-enroll generally felt that they would if the problems they discussed were attended to.

Student I. Marian _________ is a Black female student who enrolled in the Academy for Career Education in August of 1973 as a tenth grade student. Her reasons for enrolling in the Academy program included the desire to learn more about different careers, to participate in learning activities outside of "school," and to receive more individual attention than she was afforded in her previous school. Although neither of her parents completed high school, both did attend for a number of years before dropping out. Marian has decided that she will continue her education after graduation from the Academy and pursue a full-time career in Business Administration.

Results on the Comprehensive Tests of Basic Skills place Marian well below the national norms for tenth grade students in both Reading and Arithmetic. Pretest scores which were obtained prior to her enrollment in the Academy reflected grade equivalents of 7.9 and 3.2 in Reading and Arithmetic respectively. Posttest scores from the instrument administration in April 1974 were 7.5 and 6.7 in Reading and Arithmetic respectively. Marian's above average grades (B+) and attendance are indicative of her perserverance in the Academy program. While there was no significant change in her grade equivalent level in Reading as measured by the Comprehensive Tests of Basic Skills; a significant increase in grade equivalent level did occur in Arithmetic where Marian went from 3.2 to 6.7, an increase of 3.5 grade levels. In the case study review Marian repeatedly commented upon the Individualized Learning Center's positive impact on her grades in English and Mathematics and stated that the ILC was among the most worthwhile activities she had been involved in while a student at the Academy.

Marian has indicated her satisfaction with the Academy program, with the exception of Guidance activities. These activities she feels are not relevant to the experiences she has had in the other elements of the Academy program. In the current school year (1973-1974) Marian has participated in career explorations in the Communications and

Government clusters one full school day each week and has indicated that her experiences in these have been interesting and useful in making plans for the future. While enrolled in the Communications cluster in the Fifth Quarter, Marian attended employer courses at the KYW television station, the WFLN radio station and Chilton Publishing Company. Her experiences in the Government cluster involved exploration of the Civil Service Commission, the United States Department of Health, Education and Welfare, the Internal Revenue Service and the Marine Corps Supply Depot. In the Government cluster Marian maintained an A average in each of the employer sites and had an attendance rate of 100%.

Marian has exhibited academic and personal growth while enrolled in the Academy program. It is anticipated that the next two years in the program will build upon that growth and provide her with additional insights into her own capabilities and the opportunities available to her upon graduation.

Student 2. Joe __________ enrolled in the Academy for Career Education in the beginning of the 1972-1973 school year as an eleventh grade student. At the end of the current school year (1973-1974) he will graduate from the Academy program. Joe is a White male student whose father completed elementary school and whose mother attended, but did not complete, high school. The major reasons Joe has given for enrolling in the Academy program were his wanting to get into a program which was different from regular schools and his perceived need of greater individual attention than he was receiving in his previous school. After graduation from the Academy Joe plans to work full-time in the field of restaurant management.

In his five quarters of instruction in the Academy program (3 quarters in 1972-1973 and 2 quarters to date in 1973-1974) Joe has compiled a C average in his courses. His grades range from A's in elective courses such as Creativity, Hiking, and Workshops in Living (each of these courses were taken in 1972-1973) to F's in English courses and one art course. The majority of his grades have been C's. Results of the Comprehensive Tests of Basic Skills indicate that Joe is below the national norms for twelfth grade students in both Reading and Mathematics. Pretest scores which were obtained prior to his enrollment in the Academy reflected grade equivalents of 10.4 and 7.7 in Reading and Mathematics respectively. Posttest scores from the instrument administration in March 1974 were 10.8 and 9.2 in Reading and Mathematics respectively. Joe commented in the case study interview that "learning was easier" in the Individualized Learning Center than it had been in his previous school and that he enjoyed working at his own pace. Joe's increase in mathematical grade level (1.5 grade levels) as measured by the CTBS is seen as substantial. It is interesting to note that while he asserts that he enjoyed the ILC experience and felt that he learned in it, Joe does not feel that the experience will be of help in what he plans to do. This attitude was evident throughout the interview, while he enjoyed the program he does not feel it was instrumental in the formulation of his future plans. The one area in which Joe feels he has grown as a result of the Academy experience is in his acceptance of responsibility for decisions pertinent to his future plans.

When asked if he would enroll in the program if he had it to do over over again, Joe replied that he would.

Joe's experiences in Career Explorations, from his initial enrollment to the end of the Sixth Quarter, included participation in the Utilities, Health, Research, and Communications clusters. While enrolled in these clusters he explored the Philadelphia Gas Works, the Bell Telephone Company and the Philadelphia Water Works (Utilities Cluster); Hahnemann Hospital (Health Cluster); Research for Better Schools, Incorporated, University City Science Center and Wyeth Industries (Research Cluster); and KYW Television, WFLN Radio and Chilton Publishing Company (Communications Cluster). His best grades in these courses were in the Utilities cluster (B) where he also had his best career exploration attendance rate (90%).

Joe appears to have progressed through the Academy program with minimal self-involvement in its expressed goals. In spite of this, there have been genuine indications of personal growth and a willingness to accept responsibility for his future. While his current interest in restaurant management is not directly related to an exploration or specialization experience, his mature outlook (evidenced by his application to a managerial course) may be seen as an outgrowth of his contacts with certain Academy staff members, especially those in the guidance unit.

Basic Skills Unit

Overview. The following tasks were performed in the evaluation of the Basic Skills Unit in FY 1974.

1. Survey Staff and Student Orientation to ILC Procedures;
2. Determine Individualization, Participation, and Student Progress in Basic Skills;
3. Evaluate Adequacy and Integration of Documentation Systems; and
4. Ascertain Student and Staff Opinions of Materials Used.

Each of these tasks was documented in Task Report 14C1. Following are the summarized results of each of each of the evaluation tasks.

Task 1 - Survey Staff and Student Orientation to ILC Procedures. Orientation for students occurred as a continuous, integral part of the instructional process in the Individualized Learning Center (ILC) until the students demonstrated the capacity to work independently within the context of the individualized curriculum. After introducing students to the materials and procedures, staff recapped the procedures when necessary and reinforced appropriate use. This orientation was conducted mainly in small group presentations and individual conferences led by the Coordinator of the ILC. Orientation for staff was also a continuous, integral part of the instructional format. Staff were introduced to instructional techniques which are effective in the context of individualized instruction: among the methods and skills especially emphasized were planning, tutorial instruction, and the adaptation of materials to the individualized approach of the materials.

Task 2 - Determine Individualization, Participation, and Student Progress in Basic Skills. Individualization of instruction in the Basic Skills Unit was determined by three methods; an individualization

Checklist which was administered to four members of the Career Education Program not directly involved in the ILC, elicitation of student opinion, and the identification and charting of curriculum materials being used by each student at any given time. Responses to the Individualization Checklist indicated agreement that: lessons were planned individually; tests were used to determine levels of achievement and to guide use of individual learning units; and students were allowed to progress at their own rate, were assigned different tasks at a given time, were given help individually, and were tested individually when they completed learning tasks.

Student opinion of the ILC activities indicated that a large majority of the Academy students perceived the program as allowing them to progress at their own rate and that a majority of students felt that the materials were providing for their individual needs.

The third measure of individualization was the identification and charting of the level of curriculum materials being used by each student at any given time. The use of a great many levels of curricular materials by students enrolled in the ILC would be further evidence of the program's individualization. The results of the identification and charting were as follows. Eighteen different units of ILA Communications Skills material were being used by 31 students; 23 different units of ILA Mathematics materials were being used by 77 students. Sixteen different non-ILA English curriculum areas were being used by 64 students; 10 different non-ILA curriculum materials were being used by 30 students. Overall, 77 different curriculum units were being used by students participating in 202 learning activities. These figures represent the status of ILC materials in use during the week of April 15, 1974, an arbitrarily selected date. The evaluation of the ILC's instructional materials revealed them to be highly individualized.

Student participation in the Basic Skills Unit was determined by an examination of student enrollment and rates of attendance in the ILC. Student enrollment in the ILC was approximately 90% throughout FY 1974. Rates of attendance in the ILC ranged from 70% to 80% by quarter. A complete discussion of rates of attendance may be found in Task Report 14C1.

Student progress in the Basic Skills Unit was evaluated by examining the number of skills mastered in the ILA curriculum, the quantity of credits earned,grades earned, and progress on the Comprehensive Tests of Basic Skills (CTBS). The last (progress on the CTBS) will be discussed in the Summative Evaluation section of this report. In the Fifth and Sixth Quarters the average numbers of skills mastered in ILA Math was approximately 46 for tenth/eleventh grade students, and 24 for twelfth grade students. In ILA English during the same period the average number of skills mastered was 15 for tenth/eleventh grade students and 12 for twelfth grade students. The Director of the Basic Skills Unit reported that instructors tended to use non-ILA materials more for English than for mathematics activities; this might explain the differences in skill mastery in these areas. Skills mastered information must be interpreted with caution since discrepancies could be due to factors such as progression to a new curriculum, the use the use of non-ILA materials and student motivation.

The average credit earned per unit in the ILC Math activities was approximately .24 in the Fifth and Sixth Quarters for tenth/eleventh grade students and .28 for twelfth grade students. In ILC English activities during the same period tenth/eleventh grade students earned an average of .29 credits while the twelfth grade students earned an average of .27 credits. The average grade earned in ILC activities by Academy students was in the C to C+ range.

Task 3 - Evaluate Adequacy and Integration of Documentation Systems. The documentation system used in the ILC consisted of a manual system which was fully developed and a computerized system which is still in the developmental stages. The manual documentation system consisted of four forms: the General Information Form, the Student Prescription Booklet-Form, the Student Profile, and the Student Summary Sheet. Each of these forms is briefly described below.

The General Information Form was filled out for each student upon his or her entry into the ILC. The form was composed of three parts. Part one included general personal information concerning the student such as sending school, date of birth, grade level, parent or guardian, home telephone number, and emergency telephone number. The second part of the form contained the results of the student's performance on standardized tests. The third part of the form served as a learning contact between the student and his instructor. Basic skills objectives for each subject area were agreed upon in a student-instructor conference; this agreement was recorded and signed by both the instructor and the student. The General Information Form was placed in the student's file and could be referred to or updated during the school year.

The Student Prescription Booklet-Form provided a record of the student's progress through individual skill areas. These forms were completed daily and are housed in each student's work folder.

The Student Profile recorded the student's progress in units of the ILA communication skills or mathematics curriculum materials. The form was not used for students who were not participating in either subject area of the curriculum. The Student Profile was stored in each student's work folder.

The Student Summary Sheet was filled out quarterly for each student. The form contained information regarding the student's attendance, grades, total hours scheduled, total hours attended, late arrivals to learning activities, and the particular work scheduled and mastered by the student. This information was recorded by the teacher for each subject area in the Basic Skills Unit.

The staff and administrator of the Academy for Career Education reported that these forms had proved adequate for the needs of the instructors and students. The manual system also proved to be adequate for the needs of the evaluation staff in completing tasks regarding the Basic Skills Unit. However, there was a time element which proved to be cumbersome for both the Academy staff and the evaluation staff. Completion of the Student Summary Sheets took as long as two weeks after the end of a quarter. This delay plus the processing time necessary has made it difficult to report out results with the speed that would make them most useful.

The computer system of documentation was intended to provide all forms of information contained by the manual documentation system and enable additional analyses. The initial plan called for the implementation of the manual system at the start of the academic year; this was implemented on schedule, with Weekly Attendance Reports and Student Summary Sheets designed by the evaluation staff being used. The automated system was to be designed during the Fifth Quarter, field tested Sixth Quarter, and evaluated relative to the manual system in the Seventh Quarter. In fact, given the complexity of the computer system required and the expense involved, it was not possible to implement the automated system until the Seventh Quarter. Even at this late date, the system was not complete; further development is required. The task of comparing the two systems (manual vs. computerized) was thus not accomplished. It is apparent that the automated system still has disadvantages which cause interference in the operation of the learning center. It also seems clear that the automated system has much potential for instructional and evaluative purposes. The realization of this potential will require the application of more resources in systems development. Since it is unlikely that such resources will be available in the program budget, special funding may be sought. The area of computer applications facilitating individualization is seen as an important one; however, it must be fit into the schema of priorities.

Task 4 - Ascertain Student and Staff Opinion of Materials Used. Student responses to the Student Opinion Survey (Appendix C) and an informal evaluation survey indicated that about one third of the

Academy students found the ILC materials interesting, while a plurality considered them average. A majority of the students found the materials to be above average in terms of their adequacy, while a small percentage (15%) found them to be below average in this regard. A majority of the students (approximately two-thirds) indicated that they felt they were learning more in their ILC classes than they had in their other schools.

Staff opinion, obtained through personal interviews, was highly positive toward the materials' ability to provide individualized instruction for the students. However, they indicated a desire to have a new diagnostic test for determining more specifically the weaknesses of individual students. The variety and extent of the different materials were deemed adequate and plans to utilize newly developed materials were discussed. The staff did indicate that the interest level of the materials could be raised.

Utilization of Evaluation

The evaluation activities outlined in the Introduction Section above may serve as an initial functional definition of the role of evaluation within the project. These activities were: formative evaluation, data systems development, summative evaluation, instrument development and cooperative research. Of these major evaluation activities, the first two were designed primarily to be of benefit to project staff, while the last three were oriented more toward external parties. The role of evaluation and utilization of evaluation results will be discussed within this context.

In formative evaluation it was attempted to assess each program component as defined in the "Operating Plans for FY 1974" after the component design and field test cycles had been completed. The intent was to provide formative data for use in revising the components for production of replication specifications and program performance testing. The role of evaluation was thus to provide independent assessment as an input for program development. The results of this activity were also intended to have use in program monitoring and management decision-making.

In data systems development the evaluation staff designed and monitored a system aimed at consistently and accurately capturing the most significant operational data on student performance and learning activities conduct. This system was first implemented as a manual process whose subsections were gradually replaced by machine processes. It was intended to produce a tested, fully automated system which could subsequently be operated without extensive technical assistance from the evaluation staff. The information gathered and treated by these systems was intended to have relevance to project operations by obviating clerical drudgery and to project management by providing extensive data for monitoring and decision-making.

Both of these aspects of evaluation proved to be valuable. Both proved valuable in actual utilization in other than the ways intended. A discussion of the discrepancies may prove beneficial in gaining a realistic view of the actual role of evaluation in projects such as this one.

The formative evaluation objectives related to program development and management utilization were met only to a limited extent. This seemed to be true for a variety of reasons which are complex and interrelated. In a prototypic program with multitudinous curriculum elements, many of which are developed as the program is operated and also which shape themselves to fit individual students' needs, specificity in evaluation is difficult to attain. The choice of assessing myriad individual curriculum pieces or abstracting and generalizing is often faced. In the context of limited resources and broad demands the latter choice becomes attractive, if not necessary. Generalization is also increased when program elements are lacking in prespecifiable detail. This results in evaluation findings which are generally interesting but not specifically applicable.

Related to this is the generally prevalent time-pressured flow of both development and evaluation activities. One cycle or year overlaps the next without a break for reflection, which might allow the considered application of evaluation findings and suggestions to development and visa-versa. In effect, there is not a design, field test, evaluate, redesign or other sequenced development configuration. All processes are conducted simultaneously in a general movement toward improved effects. This situation may be conducive to the continuous operation of a demonstrational program. It can be responsive to the participants in the project. But it cannot foster maximum utilization of development or evaluation efforts.

Together, the practically necessitated level of generalization in evaluation design and the limited opportunity to sequence development and evaluation in real life mitigate against the ideal utilization of formative evaluation. Formative results seem to have more usefulness in project monitoring and management, but here also the level of abstraction and time sequence present problems.

The abstraction problem can be solved only by prespecifying at a management level what information is needed and then designing a system to get it. This devolves on the second major aspect related to internal utilization, data systems.

Good data systems in comprehensive educational projects relieve operational staff of clerical duties as an incentive for them to comply, provide operational staff with useful information they otherwise wouldn't have, generate consistent and accurate information, enable rapid feedback to interested parties, and establish a data base for project evaluation as well as broader research. They are difficult to construct, more difficult to implement, and even more difficult to complete as independently functioning products. Such a level of completeness is seldom reached within the context of an experimental project. System components are usually effected at varying levels of sophistication. In this project all systems were designed and completed with manual input; machine input was designed in all intended areas and field tested in some. At this stage the functioning of the system is limited in several regards. Of primary relevance to this discussion, rapid feedback for project management is hampered. This often resulted in findings which confirmed already formed opinions. Such confirmation and specification has value, but it does not fulfill the objective of early warning about problems.

Summarizing the discussion above, it must be concluded that evaluation has had only limited success in informing program development and project administration. There was evaluation utilization in both, but it cannot be characterized as a key ingredient.

The question then becomes what is the effective role of evaluation in interaction with the project staff? Not to be unduly harsh, or worse, inaccurate, it can be said with justification that the role of internal evaluation has real significance for project staff and conduct. That role, however, appears to be different in real life from what it might be in idealized characterizations.

In order to add objectivity to this discourse on the real utilization of evaluation, a survey of key project personnel was conducted. Confirming the points above the staff indicated that the evaluation findings were very "interesting" (4.34 average rating out of a possible 5.00). They were found to be substantially less "helpful" (3.20 average rating), and less an agent of "change" (3.00 average rating). The primary impact of internal evaluation was seen by the staff as residing in the following: Evaluation reports consisely and accurately depicted the status of the project components; in this documentation function they provided realistic information on what was going on and how well program elements were functioning. Evaluation results served to confirm problems and successes which had been diagnosed at an impressional, non-quantitative level and identify new ones. In this diagnosis function they helped to define the student of known phenomena and to uncover new phenomena. The very existence of an evaluation effort served to keep people "honest" by establishing the means for independent review and assessment. This discouraged overstatement of progress and understatement of problems. Evaluation reports were also viewed as important by virtue of their fulfilling contract requirements with the funding agency, NIE. Finally, although it is difficult to ascertain degree of causality, the evaluation findings were seen as playing some role in the redesign of program elements, particularly the guidance and supplementary components.

Thus, staff saw the evaluation effort within the project as being useful in documentation, diagnosing and illuminating problems, enhancing accountability, fulfilling contract requirements and suggesting areas for program change. The value of such utilization compared with the ideal may be debated. In the context of this project it appears to be both real and significant. Since existing research literature seldom discusses the actual utilization of evaluation or its interaction with project staff, the generalizability of the conclusions presented above cannot be known. These conclusions are herein elucidated in hopes that more consideration will be given to evaluation as a contributing resource in project development in addition to a technological endeavor. Factors seen as fostering growth toward the ideal in evaluation utilization include sequencing the developmental cycle to allow incorporation of evaluation staffs to the mutual contributions possible, defining the evaluation scope to permit specificity on priority curriculum elements, and providing resources to enable rapid feedback data systems.

The three major evaluation activities more oriented toward external parties - summative evaluation, instrument development, cooperative research - exhibited a different profile during FY 1974. These activities were generally more complex technically than those geared to the internal project staff, but their utilization was simpler and more conforming to original objectives.

In summative evaluation it was attempted to assess the effects of the program overall on its participants. The intent of this effort was to establish the educational significance of the program, to provide information useful in program dissemination and expansion, and to determine areas in need of longer term development.

The function of instrument development was to provide the means for appropriately testing effects related to summative evaluation. This effort was intended to have use for the present project as well as other studies in career education.

The cooperative research activities were initiated this year under the guidance of the NIE evaluation offices for EBCE. The evaluation staffs of each of the projects participated in joint conferences which, in addition to other evaluation concerns, attempted to isolate research issues related to EBCE and to pursue them as an activity beyond contract commitments. Results of this effort were intended for dissemination to the research community.

In each of these major activities considerable success was met. The summative process and results are characterized by the present report. The instrument development is reported in the appendices. The cooperative research effort is more nascent, but it has resulted in professional papers and development thought which help to keep the whole evaluation effort more vibrant.

Each of these activities has resulted in products of use primarily to parties external to the project. For NIE they certify the conduct of the project, enhance the credibility of results, and serve as independent products of the evaluation staff. They provide public relations information for potential adopters and other interested agencies and individuals. They also have use in the extention and development of existing programs. This group of activities, then, is not subject to the intricacies of implementation and utilization discussed above in regard to the more formative endeavors. The project staff saw these functions as perhaps the most important for evaluation to perform.

In summary, the evaluation effort produced results in five areas of functioning which served to define the perceived role of internal evaluation. The objective least well met was in the utilization of findings in program development. It was suggested that both evaluation and development personnel need to work on facilitating procedures to overcome the impediments inherent in this type of demonstration project. Data systems development fell short of the ideal envisioned, but met the contract and operational needs. Project monitoring seemed to function adequately. Summative, instrument development and cooperative research activities proceeded very well. From this it may be concluded that a strong evaluation effort was designed and implemented. Results were utilized in numerous ways, most of them meeting their objectives in utilization. It is suggested that further attention be given to the actual role of internal evaluation. Desired roles which are not practible should be either discarded or made realistically possible by revising project cycles or processes. They should not be carried simply out of obedience to tradition. Other roles which are traditionally peripheral but seem to produce results in real situations may be expanded. Actual functions and interactions should be documented and investigated. In this way development in the application of evaluation technology can be furthered.

IV. SUMMATIVE EVALUATION

The intent of the summative evaluation efforts of the FY 1974 RBS Career Education Program was to determine program effects on participants, the cost feasibility of the program, and the marketability of the developed program. This section of the Final Evaluation Report will discuss each of these as well as design and population issues which relate to conclusions presented.

Evaluation Design

Student Groups. The general design of the summative evaluation efforts reflected the developmental status of the RBS Career Education Program. FY 1974 was the second year of implementation of the Career Education Program; as a result two distinct samples of experimental students were simultaneously provided educational services. These groups were the

ACE Group = Students originally recruited for FY 73 program, all equivalent to 12th graders, all in program for a second year.

ACE-Olney Group = Students recruited for FY 74 program in cooperation with Olney High School, grade equivalent split between 10th and 11th graders, all in program for first year.

The ACE group has no appropriate control group. Two groups were selected to serve as non-equivalent control groups for the ACE-Olney group. These groups were the

Comparison Group = Olney students who applied for ACE-Olney program, were accepted, but finally decided to not enroll in the program.

Context Group = A random selection of equal numbers of 10th, 11th, and 12th graders from Olney, no known exposure to program, no intended selection biases.

The Comparison group was viewed as a control group for interest in, but not participation in, a Career Education Program. However, this group self-selected itself out of the ACE-Olney group prior to the beginning of the FY 74 program. This self-selection cannot in any way be considered a random selection; this nonrandom self-selection creates a possible unknown selection bias in the comparisons involving this group. The Context group was viewed as a legitimate comparison group for determining the effects of a traditional school program for comparison with the Academy program. Since these students were not selected for equivalence to the Academy students, such comparisons must be regarded as gross indications. However, the random selection should ensure this group's representativeness of a traditional high school student body.

At the beginning of the FY 74 program, the ACE-Olney, Comparison, and Context groups were found to be comparable in terms of age, previous school attendance, previous grade point average, parental occupations and parental education levels. Data were unavailable at the beginning of the year on the race and sex characteristics of the control groups. There was a noted discrepancy between the ACE-Olney group and the control groups in terms of post-secondary plans; the control group students had a markedly higher proportion planning immediate entry into a job than did the ACE-Olney group. This discrepancy in post-secondary plans was viewed as possibly affecting later analyses; however, if it were to be the only discrepancy, it was felt that planned analyses could be performed on the posttest data with little challenge to the integrity of the procedures or interpretations.

Sex and race characteristics of the control groups were available at the end of the project year and were presented in the Student Population section of this report. Additional discrepancies were noted, especially for the Comparison group. The composition of the Comparison group was 2 to 1 female while the composition of the ACE-Olney group was 3 to 2 female. The racial composition of the Comparison group was 3 to 2 Black while the composition of the ACE-Olney group was 4 to 1 Black. The Comparison group contained only 11th graders while the ACE-Olney group contained both 10th and 11th grade students. On the average, the Comparison students were one year older than their ACE-Olney counterparts. The earlier noted future planning discrepancy became greater with 50 percent of the Comparison students indicating an employment orientation while 18 percent of the ACE-Olney students indicated such an orientation.

The Comparison group appears to be different from the ACE-Olney group on a sufficient number of continuaa to render it highly questionable as a control group. This finding will have an effect of the explication of the experimental design to be discussed later in this section.

Instruments. The following instruments were administered to both experimental and control groups. While they have some formative utility, their primary use was intended to be summative.

1. Comprehensive Tests of Basic Skills (CTBS) - This instrument measures traditional academic skills. The Reading and Arithmetic subtests were used, yielding the following scores: Reading Vocabulary, Reading Comprehension, Reading Total Arithmetic Computation, Arithmetic Concepts, Arithmetic Applications, and Arithmetic Total. Each of the scores is in the form of standard (scale) scores. The instrument has been well developed and documented, but is subject to the usual insensitivities of standardized instruments.

2. Career Maturity Inventory (CMI) - This instrument was designed to measure Career Attitudes and a set of career competencies: Self Appraisal, Occupational Information, Goal Selection, Planning, and Problem Solving. Only the Occupational Information and Planning competency subtests were used.

   This instrument has been well developed but it has not been extensively researched and documented. The four EBCE projects have questioned the reliability and validity of the scales which compose the CMI. All projects forwarded their item and factor analysis of the CMI. The results of this analysis were not available to RBS at the time of preparation of the Final Evaluation Report; thus, questions regarding the CMI still exist.

3. Assessment of Student Attitudes Questionnaire (ASA) - This instrument has been developed by the RBS staff to measure attitudes toward several elements in the learning environment: Education in General, School Curriculum, School Resources, and School Counseling. While further development effort is indicated for the instrument, it is currently a highly reliable and valid attitude scale. A report of the reliability and validity of the instrument is contained in the appendix to this report.

4. Student Demographic Data Questionnaire (SDQ) - This instrument was constructed by the evaluation staffs of all EBCE projects to provide common data on basic characteristics. The questionnaire includes: Name, Sex, Birth Date, Race, Grade Level, Post Secondary Plans, Parents Education Level, Parent Occupations, Sending School Grades, and Sending School Attendance.

Another series of instruments were established for assessing participant groups only. These instruments have all been developed by the evaluation staff. They include the Student Opinion Survey, the Parent Opinion Survey, and the Employer Questionnaire. Descriptions and discussions of these instruments are contained in the appendix of this report.

Hypotheses. Hypotheses regarding program outcomes fall into two categories: those relating to student outcomes and those relating to other program effects. Hypotheses regarding student outcomes of the Career Education Program reflect the existence of the two distinct student experimental samples as well as the existence of control groups. Some of the hypotheses are stated in terms of significant gain with the presenting level the basis of comparison; others are stated in terms of relative or comparative outcomes. The former relate only to the experimental students and the latter relate to this year's entering students and their control groups.

Hypotheses of program effects are listed below. The instruments and respondent groups which are appropriate for the testing of a hypothesis are listed with each hypothesis.

The hypotheses which relate to student outcomes are

1. Students will gain significantly ($p<.10$) in basic skills over the course of the year. Respondent groups are the ACE and ACE-Olney groups. The appropriate test is the CTBS.
2. Students will gain significantly ($p<.10$) more in basic skills than comparable students in a traditional school. The respondent groups are the ACE-Olney, Comparison and Context Groups. The appropriate instrument is the CTBS.
3. Students will gain significantly ($p<.10$) in career maturity. The respondent groups are the ACE and ACE-Olney groups. The appropriate instrument is the CMI.
4. Students will gain significantly ($p<.10$) more in career maturity than comparable students in a traditional school. The respondent groups are the ACE-Olney, Comparison and Context groups. The appropriate instrument is the CMI.
5. Students will evidence a significantly ($p<.10$) more positive attitude toward school than students in a traditional school. The respondent groups are the ACE-Olney, Comparison and

and Context groups. The appropriate instrument is the ASA.

6. Students will gain significantly ($p<.10$) in career knowledge over the course of cluster experiences. The respondent groups are the ACE and the ACE-Olney groups; the appropriate instrument is the cluster test of knowledge. Due to difficulty in filling the staff position of instrument developer, only one cluster test of knowledge was sufficiently developed to be used on a pre-post test basis. Another appropriate measurement is the Occupational Information and Planning competency subtests of the CMI; they will be used to test this hypothesis.

Hypotheses related to other program effects are listed below:

1. Employers will be able to provide learning experiences sufficient to meet student needs and interests. This hypothesis will be tested by comparing student needs and stated student interests with the learning experiences provided by employers.
2. Employers will evidence a positive attitude and commitment regarding the program. The respondent group is the pool of employers, unions, and agencies providing learning experiences. The appropriate instrument is the Employer Questionnaire.
3. Parents will evidence a positive attitude and commitment regarding the program. The respondent group is the parents of the experimental students. The appropriate instrument is the Parent Opinion Survey.
4. Institutional structures will be established to enable the conduct of the program. The implementation of the pro-

gram will be examined for institutional structures and interrelationships which enable the conduct of the program.

5. It will be demonstrated that the program can be operated on a cost feasible basis. This hypothesis will be tested by comparing actual costs with criteria for feasible costs previously defined in the "Operating Plans for FY 1974."
6. It will be demonstrated that there is a ready market for the program. This hypothesis will be tested with the results of a poll of potential adopters of the developed career education program.

Administration of Instruments. The CTBS, the CMI, and the ASA were administered on a pretest-posttest basis to all student groups. The testing schedule and rationale are presented in the appendix to this report. Intertest interval for the CTBS was 8 months for all groups. The intertest interval for the CMI was 8 months for the ACE-Olney group and its control groups and 6 months for the ACE group; since there are no direct comparisons to be made between the ACE group and other groups, this discrepancy is viewed as not substantially affecting the posttest analyses. The intertest interval for the ASA was 7 months for the Comparison and Context groups, 6 months for the ACE-Olney group, and 5 months for the ACE group; any bias due to differences in intertest interval is against the experimental students.

Overview of Experimental Design. The testing of hypotheses which relate to experimental students only are examples of a one group pretest-posttest design as elucidated by Campbell and Stanley (1963). The testing of hypotheses related to the ACE-Olney Group and its control groups are examples of the non-equivalent control groups pretest-posttest design. Hypotheses related to parents and employers are examples of one group retrospective posttest design.

Statistical Procedures. The statistical procedures used for testing hypotheses related to experimental students only are correlated "t" tests. For the CTBS scale scores are used; for the CMI and ASA raw scores are used. The statistical procedures used for testing hypotheses related to comparisons of the ACE-Olney, Comparison, and Context groups are analyses of covariance with the pretest level of performance the covariate and the posttest level of performance the criterion measure; this statistical control equates the groups for pretest level of performance. Due to the doubt cast on the comparability of the Comparison group, all analyses regarding the relative performance of the ACE-Olney group are conducted in two ways: (1) a three group analysis which includes the Comparison group and (2) a two group analysis which includes only the ACE-Olney and Context groups. Descriptive statistics are used as the basis for testing hypotheses related to parents, employers, costs, and marketability.

Testing of Student Hypotheses

Hypothesis 1. Students will gain significantly ($p<.10$) in basic skills over the course of the year. The hypothesis that experimental students would gain significantly in basic skills proficiency over the course of the year was tested by an examination of gains on subtests of the CTBS. The subtests used were Reading Vocabulary, Reading Comprehension, Reading Total, Arithmetic Computation, Arithmetic Concepts, Arithmetic Applications, and Arithmetic Total. Correlated "t" tests were calculated for both groups on each of the measures; one tail "t" test critical values were used since directionality of results was contained in the statement of the hypothesis. In all cases, scale scores were used in the analyses since they are the most reliable and precise scores yielded by the CTBS. For the convenience of the reader, pretest, posttest and gain scores are presented in grade equivalent form for each of the groups. This information is presented in Table 29.

Table 29 CTBS Grade Equivalents
Experimental Groups

	ACE-Olney Group n = 38			ACE Group n = 55		
	Pre	Post	Gain	Pre	Post	Gain
Reading						
Vocabulary	8.4	9.0	.6	9.7	10.0	.3
Comprehension	8.1	8.0	-.1	8.9	9.8	.9
Total	8.2	8.6	.4	9.3	9.9	.6
Arithmetic						
Computation	7.4	8.1	.7	8.4	8.9	.5
Concepts	7.7	8.6	.9	8.3	9.0	.7
Applications	7.2	7.9	.7	7.5	8.6	1.1
Total	7.3	8.1	.8	8.2	8.9	.7

ACE Group. The ACE group demonstrated significant gain on two measures of basic skill proficiency: the Reading Comprehension subtest and the Arithmetic Applications subtest. On the remaining measures of basic skills development, the ACE group showed some gains; however, these gains were not at a level of statistical significance. CTBS gains for the ACE group are presented in Table 30.

Table 30 CTBS Scale Score Gains

ACE Group
n = 55

	Pre	Post	Gain	"t"
Reading				
Vocabulary	595.45	596.48	1.03	0.06
Comprehension	572.34	597.93	25.59	1.34*
Total	582.04	595.66	13.62	0.91
Arithmatic				
Computation	536.80	538.13	1.33	0.08
Concepts	538.46	548.80	10.34	0.57
Applications	515.49	552.07	36.58	2.12*
Total	530.22	540.55	10.33	0.59

critical value: $t \geq 1.31$, $p = .10$, $df > 30$.

ACE-Olney Group. The ACE-Olney group demonstrated significant gain on 5 of 7 measures of basic skills proficiency: Reading Vocabulary, Arithmetic Computation, Arithmetic Concepts, Arithmetic Applications, and Arithmetic Total. The ACE-Olney Group also demonstrated gain in basic skills assessed by the Reading Comprehension and Reading Total measures; however, the gain was not at a level of statistical significance. The CTBS gains for the ACE-Olney group are presented in Table 31.

Table 31 CTBS Scale Score Gain

ACE-Olney Group
n = 38

	Pre	Post	Gain	"t"
Reading				
Vocabulary	593.58	563.97	24.39	1.39*
Comprehension	531.90	543.97	11.07	.71
Total	532.34	551.21	18.87	1.13
Arithmatic				
Computation	495.92	523.84	27.92	1.75*
Concepts	508.45	540.26	31.81	2.15*
Applications	495.51	527.22	31.71	1.89*
Total	492.44	523.24	30.80	2.01*

*$t \geq 1.31$, $p = .10$, $df > 30$

The results of the correlated "t" test analyses of CTBS measures of basic skills gains offer moderate support for the hypothesis that students show significant gains in basic skills proficiency over the course of the year. The support is much stronger for the ACE-Olney group which demonstrated significant gain on 5 of 7 measures used than it is for the ACE group. The differential achievement by grade level should be a topic for further investigation.

Hypothesis 2. Students will gain significantly ($p<.10$) more in basic skills than comparable students in a traditional school. The hypothesis that experimental students would demonstrate signficantly more gain in basic skills proficiency than comparable students in a traditional school was tested by comparing the performances of the ACE-Olney, Comparison, and Context groups. The comparisons were conducted by performing analyses of covariance on the posttest performance of the groups on subtests of the CTBS; the entry level of the groups was made equivalent through the use of the covariance procedure. The subtests used were Reading Vocabulary, Reading Comprehension, Reading Total, Arithmetic Computation, Arithmetic Concepts, Arithmetic Applications, and Arithmetic Total.

Due to previously defined non-equivalence of the Comparison group, two sets of analyses were performed on the CTBS data: one included the Comparison group and the other included only the ACE-Olney and Context groups. Each set included an analysis of covariance for each subtest of the CTBS.

In all cases, the criterion measures were the posttest scale (standard) scores and the covariate was the pretest scale score. Scale scores were selected for the analysis since they are the most stable and precise scores yielded by the CTBS. For the convenience of the reader, pretest, posttest, and gain scores are presented in grade equivalent form for each of the groups. This information is presented in Tables 32 and 33.

Table 32 CTBS Grade Equivalents
Experimental Groups

	ACE-Olney Group n = 38			ACE Group n = 55		
	Pre	Post	Gain	Pre	Post	Gain
Reading						
Vocabulary	8.4	9.0	.6	9.7	10.0	.3
Comprehension	8.1	8.0	-.1	8.9	9.8	.9
Total	8.2	8.6	.4	9.3	9.9	.6
Arithmethic						
Computation	7.4	8.1	.7	8.4	8.9	.5
Concepts	7.7	8.6	.9	8.3	9.0	.7
Applications	7.2	7.9	.7	7.5	8.6	1.1
Total	7.3	8.1	.8	8.2	8.9	.7

Table 33

CTBS Grade Equivalents

Control Groups

	Comparison n = 46			Context n = 57		
	Pre	Post	Gain	Pre	Post	Gain
Reading						
Vocabulary	7.9	8.8	.9	8.6	9.0	.4
Comprehension	7.0	7.7	.7	7.6	7.7	.1
Total	7.4	8.2	.8	8.3	8.4	.1
Arithmetic						
Computations	7.4	7.6	.2	7.5	7.7	.2
Concepts	7.7	7.6	-.1	7.9	8.5	.6
Applications	7.3	7.0	-.3	7.6	7.0	-.6
Total	7.3	7.5	.2	7.5	7.7	.2

Reading Vocabulary. Each analysis failed to identify a significant difference between the ACE-Olney group and either the Comparison or Context groups; in both cases the F value was less than 1.00. The analyses of covariance are presented in Tables 34 and 35.

Table 34. CTBS Reading Vocabulary Posttest

Analysis of Covariance

Covariate = Pretest

Group	n	Pretest Mean	Posttest Mean	Adjusted Mean	Mean Difference
Comparison	23	527.0	556.1	565.7	------
ACE-Olney	38	539.6	564.0	563.5	2.2
Context	57	550.3	564.0	555.4	10.3

Analysis of Covariance

Source	S S	df	M S	F
Between	2428.3334	2	1209.16[illegible]	0.5262
Within	261943.7200	114	2297.7520	
Total	264362.0534	116		

p < .5923

Table 35. CTBS Reading Vocabulary Posttest

Analysis of Covariance

Covariate = Pretest

Group	n	Pretest Mean	Posttest Mean	Adjusted Mean	Mean Difference
ACE-Olney	38	539.6	564.0	567.7	---------
Context	56	549.4	563.6	559.9	7.8

Analysis of Covariance

Source	S S	df	M S	F
Between	1382.6767	1	1382.6767	0.5475
Within	229799.8000	91	2525.2726	
Total	231182.4767	92		

p <.4613

Reading Comprehension. There was no significant difference between the ACE-Olney group and the Comparison and Context groups on either analysis of covariance; in each instance the F value was less than 1.00. The analyses are presented in Tables 36 and 37.

Table 36. CTBS Reading Comprehension Posttest

Analysis of Covariance

Covariate = Pretest

Group	n	Pretest Mean	Posttest Mean	Adjusted Mean	Mean Difference
ACE-Olney	38	531.9	544.0	537.4	-------
Comparison	23	509.7	528.2	536.8	0.6
Context	57	525.2	530.5	528.5	8.9

Analysis of Covariance

Source	S S	df	M S	F
Between	2237.5406	2	1118.7703	0.5532
Within	230549.2100	114	2022.3615	
Total	232786.7506	116		

p< .5767

Table 37. CTBS Reading Comprehension Posttest

Analysis of Covariance

Covariate = Pretest

Group	n	Pretest Mean	Posttest Mean	Adjusted Mean	Mean Difference
ACE-Olney	38	531.9	544.0	541.7	----------
Context	56	525.4	531.0	533.2	8.5

Analysis of Covariance

Source	S S	df	M S	F
Between	1606.4858	1	1606.4858	0.8263
Within	176926.6700	91	1944.2492	
Total	178533.1588	92		

p< .3658

Reading Total. There was no significant difference between groups on either analysis of covariance. In each case the ACE-Olney group performed about the same as its non-equivalent control groups. The analyses are presented in Tables 38 and 39.

Table 38. CTBS Reading Total Posttest

Analysis of Covariance

Covariate = Pretest

Group	n	Pretest Mean	Posttest Mean	Adjusted Mean	Mean Difference
ACE-Olney	38	532.3	551.2	574.4	------
Comparison	23	515.5	534.9	544.6	2.8
Context	57	534.9	544.7	538.8	8.6

Analysis of Covariance

Source	S S	df	M S	F
Between	1777.7868	2	888.8934	0.5680
Within	178417.2700	114	1565.0638	
Total	180195.0568	116		p <.5683

Table 39. CTBS Reading Total Posttest

Analysis of Covariance

Covariate = Pretest

Group	n	Pretest Mean	Posttest Mean	Adjusted Mean	Mean Difference
Ace-Olney	38	532.3	551.2	552.1	----------
Context	56	534.6	544.5	543.6	8.5

Analysis of Covariance

Source	S S	df	M S	F
Between	1638.0098	1	1638.0098	1.0575
Within	140952.9900	91	1548.9340	
Total	142590.9998	92		

P <.3066

Arithmetic Computation. Neither analysis identified any significant difference between the ACE-Olney group and the non-equivalent control groups. The analyses of covariance are presented in Tables 40 and 41.

Table 40. CTBS Arithmetic Computation Posttest

Analysis of Covariance

Covariate = Pretest

Group	n	Pretest Mean	Posttest Mean	Adjusted Mean	Mean Difference
ACE-Olney	36	496.3	525.3	529.1	--------
Context	56	502.0	514.8	514.9	14.2
Comparison	22	508.5	513.6	509.7	19.4

Analysis of Covariance

Source	S S	df	M S	F
Between	6434.8392	2	3217.4196	0.9908
Within	357213.2400	110	3247.3931	
Total	363648.0792	112		p < .3746

Table 41. CTBS Arithmetic Computation Posttest

Analysis of Covariance

Covariate = Pretest

Group	n	Pretest Mean	Posttest Mean	Adjusted Mean	Mean Difference
ACE-Olney	36	496.3	525.3	527.1	-------
Context	56	502.0	514.8	513.0	14.1

Analysis of Covariance

Source	S S	df	M S	F
Between	4342.2472	1	4342.2472	1.3489
Within	286503.3800	89	3219.1392	
Total	290845.6272	90		p < .2486

Arithmetic Concepts. The analysis of covariance which included the ACE-Olney, Comparison, and Context groups identified a significant difference between groups. When Tukey Tests were performed on the differences between adjusted means, the ACE-Olney and Context groups were superior in performance to the Comparison group and equal to one another. The analysis of covariance which included only the ACE-Olney and Context groups confirmed this finding; there was no significant difference between the two groups. The analyses of covariance are presented in Tables 42 and 43.

Table 42. CTBS Arithmetic Concepts Posttest
Analysis of Covariance
Covariate = Pretest

Group	n	Pretest Mean	Posttest Mean	Adjusted Mean	Mean Difference
ACE-Olney	36	504.8	539.3	546.8	-------
Context	56	516.5	544.7	543.4	3.4
Comparison	22	523.2	508.8	502.5	44.3

Analysis of Covariance

Source	S S	df	M S	F
Between	31830.2056	2	15915.1028	3.9631
Within	441736.7500	110	4015.7887	
Total	473566.9556	112		

$p < .0218$

Tukey Test for Differences Between Adjusted Means

Adjusted Mean Difference	1	2
3	44.3 *	40.9 *
2	3.4	

Critical Value = 32.35
$p < .10$

Table 43. CTBS Arithmetic Concepts Posttest
Analysis of Covariance
Covariate = Pretest

Group	n	Pretest Mean	Posttest Mean	Adjusted Mean	Mean Difference
ACE-Olney	36	504.8	539.3	543.7	-------
Context	56	516.5	544.7	540.3	3.4

Analysis of Covariance

Source	S S	df	M S	F
Between	251.1312	1	251.1312	0.0603
Within	370789.4100	89	4166.1732	
Total	371040.5412	90		

$p < .8066$

Arithmetic Applications. The analysis of covariance which included the ACE-Olney, Comparisons, and Context groups revealed a significant difference between groups. Tukey Tests on the difference between adjusted means identified the Context group as performing significantly lower than the ACE-Olney and Comparison groups which were equal to one another. The analysis of covariance which included only the ACE-Olney and Context Groups also identified the significant difference in posttest levels of performance. The analyses of covariance are presented in Tables 44 and 45.

Table 44. CTBS Arithmetic Applications Posttest

Analysis of Covariance

Covariate = Pretest

Group	n	Pretest Mean	Posttest Mean	Adjusted Mean	Mean Difference
1. ACE-Olney	36	490.9	526.8	527.7	--------
2. Comparison	22	471.8	497.1	506.7	21.0
3. Context	56	516.2	493.3	482.9	44.8

Analysis of Covariance

Source	S S	d f	M S	F
Between	43870.7402	2	21935.3701	3.9902
Within	604710.1900	110	5497.3654	
Total	648580.9302	112		

$p < .0213$

Tukey Test for Differences Between Adjusted Means

Adjusted Mean Difference	1	2
3	44.8*	23.8
2	21.0	

* Critical value = 37.85

$p = .10$

Table 45. CTBS Arithmetic Applications Posttest

Analysis of Covariance

Covariate = Pretest

Groups	n	Pretest Mean	Posttest Mean	Adjusted Mean	Mean Difference
ACE-Olney	36	490.9	526.8	534.5	---------
Context	56	516.2	493.3	485.6	48.9

Analysis of Covariance

Source	S S	df	M S	F
Between	51230.7149	1	51230.7149	10.6309
Within	428893.5600	89	4819.0288	
Total	480124.2749	90		

$p < .0016$

Arithmetic Total. Neither analysis revealed any significant difference between the ACE-Olney and Control groups. The analyses of covariance are presented in Tables 46 and 47.

Table 46. CTBS Arithmetic Total Posttest

Analysis of Covariance

Covariate = Pretest

Groups	n	Pretest Mean	Posttest Mean	Adjusted Mean	Mean Difference
ACE-Olney	36	489.0	523.4	529.2	-------
Context	56	505.6	514.0	509.5	19.7
Comparison	22	500.5	502.2	500.9	28.3

Analysis of Covariance

Source	S S	df	M S	F
Between	13214.2242	2	6607.1121	2.0518
Within	354224.6700	110	3220.2243	
Total	367438.8942	112		$p < .1334$

Table 47. CTBS Arithmetic Total Posttest

Analysis of Covariance

Covariate = Pretest

Groups	n	Pretest Mean	Posttest Mean	Adjusted Mean	Mean Difference
ACE-Olney	36	489.0	523.4	528.4	-------
Context	56	505.6	514.0	509.0	19.4

Analysis of Covariance

Source	S S	df	M S	F
Between	8213.0324	1	8213.0324	2.5256
Within	289424.2800	89	3251.9583	
Total	297637.3124	90		$p < .1156$

The testing of the hypothesis that experimental students would demonstrate significantly greater gain in basic skills proficiency than control students failed to identify any significant differences on any of the Reading subtests of the CTBS. Only two significant differences were identified on the Arithmetic subtests of the CTBS: the ACE-Olney and Context groups were equal to one another and superior to the Comparison group on the Arithmetic Concepts subtest and the ACE-Olney group was superior to the Context group on the Arithmetic Applications subtest. When the Comparison group was removed from the analyses, the only significant difference identified was the superior proficiency of the ACE-Olney group on the Arithmetic Applications subtest of the CTBS.

In general, the failure to reject null hypotheses for all but two subtests of the CTBS (one if the Comparison group is excluded) offers scant support for concluding that experimental students gained significantly more in basic skills proficiency than did their control group counterparts.

Hypothesis 3. Students will gain significantly ($p<.10$) in career maturity. The hypothesis that students would gain significantly in career maturity was tested by an examination of gains on scales of the Career Maturity Inventory (CMI). The scales used were the Attitude Scale a [illegible] Occupational Information and Planning competency subtests. Correlated "t" tests were calculated for gains on each of the measures; since a directionality of outcome was incorporated in the hypothesis, one tail "t" test critical values were used. The data used for the calculation of the "t" tests were the pretest and posttest raw scores for each student.

The ACE students did not demonstrate any significant gains in career maturity. Rather, they showed losses on the Attitude Scale as well as on the Occupational Information and Planning subtests of the CMI. The pretest and posttest levels and "t" tests for the ACE group are presented in Table 48.

Table 48

Career Maturity Inventory Gains

ACE Group

Scale	Pretest	Posttest	Gain	t
Attitude Scale	35.31	33.09	-2.22	-0.71
Occupational Information	15.97	12.85	-3.12	-1.50
Planning	11.46	9.74	-1.72	-1.11

critical value: $t \geq 1.31, \alpha = .10, df \geq 30$

The ACE-Olney students demonstrated significant gains on all measures of the CMI. They showed significant gain on the Attitude Scale as well as on Occupational Information and Planning subtests of the CMI. Gains, pretest and posttest levels, and "t" tests are presented in Table 49.

Thus, the hypothesis that students would gain significantly in career maturity is supported by the CMI performance of the ACE-Olney group and not supported by the performance of the ACE group. The differential performance by the two groups is difficult to interpret. Differential Career Guidance was provided to the two groups:

Table 49

Career Maturity Inventory Gains

ACE-Olney Group

Scale	Pretest	Posttest	Gain	t
Attitude Scale	32.77	34.29	+1.52	1.37*
Occupational Information	14.15	15.46	+1.31	1.58*
Planning	10.21	13.44	+3.23	3.86*

critical value: $t \geq 1.31$, $\alpha = .10$, $df \geq 30$

the ACE group received one hour a week of Group Guidance and the ACE-Olney group recieved two hours a week of Group Guidance. This differential guidance does not explain the losses in career maturity evidenced by the ACE group; one might expect less gain but a loss should not be anticipated since guidance was provided. One plausible explanation would be that career maturation is especially facilitated by the first year's participation in a Career Education Program; data are not available on the first year's growth of the ACE students and this explanation cannot be supported. This possible effect due to time of participation in the Career Education Program is a topic that requires further investigation before any conclusions can be substantiated.

Hypothesis 4. Students will gain significantly (p<.10) more in career maturity than comparable students in a traditional school. The hypothesis that experimental students would demonstrate significantly more gain in career maturity than comparable students in a traditional high school was tested by comparing the performance of the ACE-Olney, Comparison and Context groups on the Attitude Scale and the Occupational

Information and Planning subtests of the Career Maturity Inventory (CMI). The comparisons were conducted by performing analyses of covariance on the posttest performance levels on the CMI measures; the entry level of the groups was made equivalent through the use of the covariance procedure. Raw scores were the form of the data used. In all cases, the posttest performance score was the criterion measure and the pretest performance score was the covariate.

Two sets of analyses were conducted due to the previously identified non-equivalence of the Comparison group: one set included the ACE-Olney, Comparison and Context groups and the other included only the ACE-Olney and Context groups. Each set included an analysis for each of the CMI measures.

Attitude Scale. No significant difference between the ACE-Olney group and the control groups was identified when all three groups were included in the analysis. However, when the variability due to the Comparison group was eliminated from the analysis, a significant difference between the ACE-Olney and Context groups was revealed; the ACE-Olney group was significantly superior to the Context group in attitudes measured by the Career Maturity Inventory. The results of the analyses of covariance were presented in Tables 50 and 51.

Occupational Information Subtest. Significant between group differences were identified on both analyses of covariance. In the analysis of covariance which included all these groups, Tukey Tests on the differences between adjusted means indicated that the ACE-Olney

Table 50. CMI Attitude Scale Posttest

Analysis of Covariance

Covariate = Pretest

Group	n	Pretest Mean	Posttest Mean	Adjusted Mean	Mean Difference
1. ACE-Olney	48	32.77	34.29	33.71	-------
2. Context	30	31.90	31.93	31.82	1.89
3. Comparison	17	30.41	31.05	31.75	1.96

Analysis of Covariance

Source	S S	d f	M S	F
Between	85.9304	2	42.9652	1.9749
Within	8349.7414	91	21.7354	
Total	8435.6718	93		

$p < .1447$

Table 51. CMI Attitude Scale Posttest

Analysis of Covariance

Covariate = Pretest

Group	n	Pretest Mean	Posttest Mean	Adjusted Mean	Mean Difference
1. ACE-Olney	48	32.77	34.29	34.05	--------
2. Context	30	31.90	31.93	32.17	1.88

Analysis of Covariance

Source	S S	d f	M S	F
Between	64.9778	1	64.9778	3.0556
Within	1594.8975	75	21.2653	
Total	1659.8753	76		

$p < .0846$

group was superior to the Comparison and Context groups which, in turn, were equal to one another. The analysis of covariance which included only the ACE-Olney and Context groups also indicated that the ACE-Olney group was significantly better than the Context group in its mastery of occupational information. The analyses are presented in Tables 52 and 53.

Table 52. CMI Occupational Information Posttest

Analysis of Covariance

Covariate = Pretest

Group	n	Pretest Mean	Posttest Mean	Adjusted Mean	Mean Difference
1. ACE-Olney	48	14.15	15.46	13.95	--------
2. Comparison	17	10.47	9.06	9.87	4.08
3. Context	30	10.67	8.20	8.89	5.06

Analysis of Covariance

Source	S S	d f	M S	F
Between	453.9654	2	226.9827	13.6747
Within	1510.4817	91	16.5987	
Total	1964.4471	93		

$p < .0001$

Tukey Test for Difference Between Adjusted Means

Adjusted Mean Difference	1	2
3	5.06*	0.98
2	4.08*	

* Critical value = 2.32

$p = .10$

Table 53. CMI Occupational Information Posttest

Analysis of Covariance

Covariate = Pretest

Group	n	Pretest Mean	Posttest Mean	Adjusted Mean	Mean Difference
1. ACE-Olney	48	14.15	15.46	14.35	--------
2. Context	30	10.67	8.20	9.31	5.04

Analysis of Covariance

Source	S S	d f	M S	F
Between	397.0430	1	397.9439	23.8284
Within	1252.5300	75	16.7004	
Total	1650.4739	76		

$p < .0001$

Planning Subtest. Both analyses of covariance indicated that there was a significant difference in the planning performances of the groups. The analysis of covariance which included all three groups produced an F Value of 27.9292. Tukey Tests performed on the adjusted means indicated that the ACE-Olney group performed significantly better on planning tasks than did the Comparison and Context groups; the Comparison and Context groups were equal to one another. The analysis of covariance which included only the ACE-Olney and Context groups also indicated that the ACE-Olney group was significantly better than the Context group in planning performance. The analyses of covariance are presented in Tables 54 and 55.

Table 54. CMI Planning Posttest

Analysis of Covariance

Covariate = Pretest

Group	n	Pretest Mean	Posttest Mean	Adjusted Mean	Mean Difference
1. ACE-Olney	48	10.21	13.44	13.39	-------
2. Comparison	17	13.06	7.88	7.57	5.82
3. Context	30	5.70	6.77	7.13	6.26

Analysis of Covariance

Source	S S	d f	M S	F
Between	876.3198	2	438.1559	27.9292
Within	1427.6662	91	15.6882	
Total	2303.9460	93		

$p < .0001$

Tukey Test for Difference Between Adjusted Means

Adjusted Mean Difference	1	2
3	6.26*	1.31
2	5.82*	

* Critical value = 2.25

$p = .10$

Table 55. CMI Planning Posttest

Analysis of Covariance

Covariate = Pretest

Group	n	Pretest Mean	Posttest Mean	Adjusted Mean	Mean Difference
1. ACE-Olney	48	10.21	13.39	12.23	———
2. Context	30	5.70	7.13	7.97	4.26

Analysis of Covariance

Source	S S	d f	M S	F
Between	255.2877	1	255.2877	19.6710
Within	973.3350	75	12.9778	
Total	1228.6[illegible]	76		

$p < .0001$

The three group analysis of covariance showed that the ACE-Olney group gained significantly more than did the Comparison and Context groups in the Career Maturity Inventory Occupational Information and Planning competency subtests. The three group analysis revealed no differences on the Attitude Scale. When the Comparison group was eliminated from the analyses due to its doubtful comparability, the ACE-Olney group showed more gain than the Context group on the Attitude Scale as well as on the Occupational Information and Planning competency subtests.

The results of the analyses clearly indicate that the ACE-Olney group gained significantly more in career maturity than the control groups as indicated by the competency subtests of the CMI. The two group analysis indicates that the ACE-Olney group also gained significantly more in attitudes than the Context group.

Thus, there is strong support for the conclusion that the ACE-Olney students gained significantly more in all measured aspects of career maturity than did comparable students in a traditional high school.

Hypothesis 5. Students will evidence a significantly (p.<10) more positive attitude toward school than students in a traditional school. The hypothesis that experimental students would evidence a significantly more positive attitude toward school than their control counterparts was tested by comparing the performance levels of the ACE-Olney, Comparison and Context groups on the Assessment of Student Attitudes Scale (ASA). The comparisons were conducted by performing analyses of covariance on the posttest performance levels on the subtests and overall mean of the ASA. Analyses were thus performed for Attitude Toward Education in General, Attitude Toward School Curriculum, Attitude Toward School Resources, Attitude Toward School Counseling, and Overall Attitude Toward Learning Environments. Raw scores were used for each of the subscales and overall means were used for the Overall Attitude Toward Learning Environments. For all analyses, the posttest level of the attitude scale was used as the criterion measure and the pretest level was used as the covariate.

Due to the previously identified non-equivalence of the Comparison group, two sets of analyses were conducted. One included the ACE-Olney, Comparison, and Context groups and the other included only the ACE-Olney and Context groups. Each set included an analysis for each of the ASA measures.

Attitude Toward Education in General. Neither analysis of covariance revealed any significant differences between groups in their Attitude Toward Education in General. The analyses of covariance are presented in Tables 56 and 57.

Table 56. ASA Attitude Toward Education in General

Analysis of Covariance

Covariate = Pretest

Group	n	Pretest Mean	Posttest Mean	Adjusted Mean	Mean Difference
1. ACE-Olney	32	345.6	354.5	351.5	-------
2. Comparison	22	335.0	344.2	346.2	5.3
3. Context	56	337.2	335.7	336.2	14.8

Analysis of Covariance

Source	S S	d f	M S	F
Between	4759.9508	2	2379.9754	0.4555
Within	553825.4500	106	5224.7684	
Total	558585.4008	108		

p < .6354

Table 57. ASA Attitude Toward Education in General

Analysis of Covariance

Covariate = Pretest

Group	n	Pretest Mean	Posttest Mean	Adjusted Mean	Mean Difference
1. ACE-Olney	32	435.6	354.5	352.7	-------
2. Context	56	337.2	335.7	337.6	15.1

Analysis of Covariance

Source	S S	d f	M S	F
Between	4611.2247	1	4611.2247	0.8322
Within	470958.5300	85	5540.6887	
Total	475569.7347	86		

p < .3643

Attitude Toward School Curriculum. The analysis of covariance which included all three treatment groups did not reveal any significant differences between the groups in the attitude toward school curriculum. However, when the variance due to the Comparison group was eliminated from the analysis, the analysis of covariance indicated that the ACE-Olney group had a significantly more positive attitude toward school curriculum than did the Context group. The analyses of covariance are presented in Tables 58 and 59.

Table 58. ASA Attitude Toward School Curriculum

Analysis of Covariance

Covariate = Pretest

Group	n	Pretest Mean	Posttest Mean	Adjusted Mean	Mean Difference
1. ACE-Olney	32	345.0	369.4	377.8	-------
2. Comparison	22	370.0	368.2	364.5	13.3
3. Context	56	372.1	351.8	347.1	30.7

Analysis of Covariance

Source	S S	d f	M S	F
Between	17835.5841	1	17835.5841	2.9649
Within	511322.0000	85	6015.5530	
Total	529157.5841	86		

$p < .0888$

Table 59. ASA Attitude Toward School Curriculum

Analysis of Covariance

Covariate = Pretest

Group	n	Pretest Mean	Posttest Mean	Adjusted Mean	Mean Difference
1. ACE-Olney	32	345.0	369.4	375.6	-------
2. Context	56	372.1	351.8	345.6	30.0

Analysis of Covariance

Source	S S	d f	M S	F
Between	19483.3318	2	9741.6659	1.7114
Within	603364.7700	106	5692.1205	
Total	622848.1018	108		

$p < .1856$

Attitude Toward School Resources. Each analysis of covariance indicated that there was a significant between groups difference in attitude toward school resources. Tukey Tests performed on adjusted means resulting from the three group analysis indicated that the ACE-Olney group had a signficantly more positive attitude toward school resources than did the Comparison and Context groups; the Comparison and Context groups were equal to one another. The analysis of covariance which included only the ACE-Olney and Context groups also indicated that the ACE-Olney group had a significantly more positive attitude toward school resources than did the Context group. The analyses of covariance are presented in Tables 60 and 61.

Table 60. ASA Attitude Toward School Resources

Analysis of Covariance

Covariate = Pretest

Group	n	Pretest Mean	Posttest Mean	Adjusted Mean	Mean Difference
1. ACE-Olney	32	319.8	380.3	385.6	-------
2. Comparison	22	332.0	345.5	344.2	41.4
3. Context	56	337.5	324.9	320.8	64.8

Analysis of Covariance

Source	S S	d f	M S	F
Between	84114.0730	2	42057.0365	11.3282
Within	393536.6800	106	3712.6102	
Total	477650.7530	108		

$p < .0001$

Tukey Test for Difference Between Adjusted Means

Adjusted Mean Difference	1	2
3	64.8*	23.4
2	41.4*	

* Critical value = 31.70

$p = .10$

Table 61. ASA Attitude Toward School Resources

Analysis of Covariance

Covariate = Pretest

Groups	n	Pretest Mean	Posttest Mean	Adjusted Mean	Mean Difference
ACE-Olney	32	319.8	380.3	383.9	———
Context	56	337.5	324.9	321.3	62.6

Analysis of Covariance

Source	S S	df	M S	F
Between	78166.6852	1	78166.6852	19.8107
Within	335383.2900	85	3945.6858	
Total	413549.9732	86		p <.0001

Attitude Toward School Counseling. The three group analysis of covariance revealed no significant between group differences in attitude toward school counseling. When the Comparison group was removed from the analysis, the two group analysis of covariance indicated that the ACE-Olney group had a significantly more positive attitude toward counseling than did the Context group. The analyses of covariance are presented in Tables 62 and 63.

Table 62. ASA Attitude Toward School Counseling

Analysis of Covariance

Covariate = Pretest

Groups	n	Pretest Mean	Posttest Mean	Adjusted Mean	Mean Difference
ACE-Olney	32	282.5	340.0	340.4	-------
Comparison	22	273.6	300.0	304.0	36.4
Context	56	294.6	307.5	303.1	37.3

Analysis of Covariance

Source	S S	df	M S	F
Between	31193.7978	2	15596.8989	1.9876
Within	831779.9900	106	7846.9811	
Total	862973.7878	108		

$p < .1421$

Table 63. ASA Attitude Toward School Counseling

Analysis of Covariance

Covariate = Pretest

Groups	n	Pretest Mean	Posttest Mean	Adjusted Mean	Mean Difference
ACE-Olney	32	282.5	340.0	342.8	--------
Context	56	294.6	307.5	305.1	37.7

Analysis of Covariance

Source	S S	df	M S	F
Between	23361.4982	1	23361.4982	3.3917
Within	710772.5400	85	8362.0299	
Total	734136.0382	86		

$p < .0691$

Overall Attitude Toward Learning Environments. Both analyses of covariance indicated that there was a significant between group difference in overall attitude toward learning environments. Tukey Tests performed on the adjusted means of the three group analysis indicated that the ACE-Olney group had a significantly more positive attitude toward learning environments than the Context group did; the Comparison group was midway between the two and did not differ significantly from either the ACE-Olney group or the Context group. The analyses of covariance are presented in Tables 64 and 65.

Table 64. ASA Overall Attitude Toward Learning Environments

Analysis of Covariance

Covariate = Pretest

Groups	n	Pretest Mean	Posttest Mean	Adjusted Mean	Mean Difference
1. ACE-Olney	32	328.2	361.8	363.0	---------
2. Comparison	22	328.9	342.9	343.8	19.2
3. Context	56	334.6	330.3	328.2	34.8

Analysis of Covariance

Source	S S	df	M S	F
Between	24808.5506	2	12404.2753	3.1956
Within	411710.0300	106	3884.0569	
Total	436518.5806	108		

p <.0450

Tukey Test for Difference Between Adjusted Means

Adjusted Mean Difference	1	2
3	34.8*	15.6
2	19.2	

* Critical value = 32.42

p = .10

Table 65. Overall Attitude Toward Learning Environments

Analysis of Covariance

Covariate = Pretest

Groups	n	Pretest Mean	Posttest Mean	Adjusted Mean	Mean Difference
ACE-Olney	32	328.2	361.8	363.2	--------
Context	56	334.6	330.3	328.8	34.4

Analysis of Covariance

Source	S S	df	S S	F
Between	24086.0750	1	24086.0750	5.7679
Within	354948.2200	85	4175.8615	
Total	379034.2950	86		$p < .0186$

The analyses of the ASA which included the ACE-Olney, Comparison, and Context groups indicated that the ACE-Olney group had a significantly more positive attitude toward school resources than did the Comparison and Context groups and a significantly more positive overall attitude toward learning environments than did the Context group.

When the Comparison group was omitted from the analyses of covariance, the ASA indicated that the ACE-Olney group had a significantly more positive attitude than did the Context group toward school curriculum, school resources, and school counseling as well as a significantly more positive overall attitude toward learning environments. Only on one subtest of the ASA did the ACE-Olney group not show a significantly more positive attitude than the Context group: Attitude Toward Education in General.

Hypothesis 6. Students will gain significantly (p<.10) in career knowledge over the course of cluster experiences. The hypothesis that experimental students would gain significantly in career knowledge over the course of their cluster experiences was tested by an examination of their gains on the competency subtests of the CMI. The Occupational Information subtest measures knowledge of characteristics of occupations and the Planning subtest requires knowledge of sequences of factors related to occupations. Both subtests thus require career knowledge; the Planning subtest requires additional ordering of that knowledge.

Correlated "t" tests were calculated for the ACE and ACE-Olney group on each competency test. One tail "t" test values were used since directionality of outcome was included in the statement of the hypothesis. The results of the correlated "t" tests were reported in the testing of Hypothesis 3. The ACE students showed no significant gains in career knowledge; rather, they showed losses on both measures. The ACE-Olney students did show significant gains in career knowledge as indicated by both the Occupational Information and Planning subtests of the CMI.

Thus, there is partial support for the conclusion that students will gain significantly in career knowledge over the course of cluster experiences. First year participants showed significant gains. The losses exhibited by second year students cannot be fully interpreted since first year data are not available on these measures.

Other Effects Hypotheses

Hypothesis 1. Employers will be able to provide learning experiences sufficient to meet student needs and interests. This hypothesis is to be tested using three adequacy ratios each yielding a percentage statistic. They are:

1. the total number of student places available in operating employer learning experiences divided by the total number of student places necessitated by program requirements; (Adequacy by Need);
2. the number of student first preference places available in each cluster divided by the number of first preferences expressed for each cluster - summed across cluster (Adequacy by Interest); and
3. the total number of student first preferences actually assigned divided by the total number of first preferences which could have been assigned under ideal scheduling conditions (Scheduling Efficiency).

The first statistic tests gross meeting of needs. The second corrects for interests and yields the percentage of correct student assignments possible given expressed interests and actual places available in each cluster. The third expresses the percentage of correct assignments actually made in light of expressed interest. Differences between 1 and 2 reflect the fit between the distribution of places available in various clusters and the places desired in those clusters. Differences between 2 and 3 reflect scheduling "slippage": cluster assignments which could have been made given maximum operational efficiency vs. those actually made. Thus, each statistic measures a different aspect of the adequacy of employer learning activities available. No percentage level was preestablished as acceptable. Obviously 100% is good; less than 100% is not as good.

Career Exploration. Program requirements indicate a minimum of 6 career explorations for each student during his Academy tenure. Given the student population, this requirement necessitated a total capacity of 125, 92 and 84 places in career exploration for the Fifth, Sixth and Seventh Quarters respectively. The need declines as continuing students complete the requirement; it increases as new students are added. The clusters of employers offering courses had total student capacities of 160, 172 and 152 for the Fifth, Sixth and Seventh Quarters respectively. This yields Adequacy by Need figures of 128%, 187% and 181%. Adequacy by Need thus exceeded the requirements.

In the Sixth Quarter the first choices for cluster assignment were known (completed Student Needs and Interests forms) for 44 students. Of these, 40 could have been given their preference given the places available in the clusters of their choice. In the Seventh Quarter the first choices were known for 75 students. Of these, 62 could have been given their preference under ideal scheduling conditions. No data were available for the Fifth Quarter. The Adequacy by Interest figures were thus 91% and 83%.

In actual scheduling during the Sixth Quarter 32 students were given their first choice. During the Seventh Quarter 54 students actually received their first choice. This yields Scheduling Efficiency quotients of 80% and 89% respectively for the two quarters.

Overall, these three statistics support the ability of the recruited employer pool to meet the needs and interests of students. Room for improvement in the fit of available places to student interests by cluster and efficiency in scheduling is indicated. It should be noted that only student first choice was employed in these analyses; second, third or fourth choice was obtained in almost all assignments. It should also be noted that a substantial number of students either did not express preferences, or those preferences were not recorded.

Career Specialization. In this area only Adequacy by Need is used as a measure since a predefined pool of employer resources did not exist. It was attempted to recruit an employer to meet each expressed student need and interest. Adequacy by Need thus measures the ability of the program staff to identify and secure employer resources to fulfill student requests.

In the Sixth Quarter 25 students requested career specializations. This defined the extent of both student needs and interests. Of these, 19 were successfully placed in the specialization of their choice. In the Seventh Quarter out of the 25 students who requested specializations, only 10 could be placed. No comparable data were available for Fifth Quarter. The resultant Adequacy by Need quotients were 76% and 40%.

Overall, these statistics do not lend strong support for the ability of employers to meet the needs and interests of students in career specializations. This area requires extensive effort in future project years.

Hypothesis 2. Employers will evidence a positive attitude and commitment regarding the program. It was intended to test this hypothesis with results from the Employer Questionnaire. This instrument was not successful in either form or procedure. Only a small number of employers (21) completed the instrument and the validity of obtained results was questionned due to the generally negative reaction of employers to the process. Thus, this hypothesis cannot be formally tested. Only gross indications can be mentioned.

Results from the Employer Questionnaire suggested a general satisfaction with the program and the students involved. A sizeable minority of employers, however, did indicate concern about the level of interest exhibited by their students. Most employers responding were concerned about feedback from the project. Feedback on the planning and implementation of their learning activities, and particularly data on their effectiveness with students, was seen as lacking. A fairly high level of employer commitment is suggested by the fact that fewer than 20% withdrew from the program during FY 1974.

Hypothesis 3. Parents will evidence a positive attitude and commitment regarding the program. In order to gather data relevant to this hypothesis two sets of items were designed for the Parent Opinion Survey. This instrument was administered to the parents of students attending the Academy for Career Education; full results are presented in Appendix C. The item sets selected for this hypothesis were "Attitude Toward the Program in General" and "Benefits of the Program". Each item had a response scale from 1 (negative) to 5 (positive). The specific items and mean responses appear below.

Table 66

Attitude Toward the Program in General

Items		Mean
1.	How well does the Career Education Program compare overall with the past school experiences of your daughter/son?	4.47
2.	If you had it to do over again, would you want your son/daughter to participate in the Career Education Program?	4.43
3.	How well do you think your son or daughter likes the Career Education Program compared with past school experiences?	4.58
	Averages	4.59

Table 67

Benefits of the Program

Items		Mean
6.	Have you received enough information about your son or daughter's progress in the Career Education Program?	4.00
7.	In comparison with regular schools how much opportunity did the Career Education Program provide your daughter or son for learning about occupations?	4.76
8.	What effect, if any, has the Career Education Program had on helping your son or daughter form career plans?	4.41
9.	In comparison with regular schools how much opportunity did the Career Education Program provide your son or daughter for General Learning?	4.53
10.	In comparison with past experiences in regular schools how motivated is your daughter or son to learn in the Career Education Program?	4.49
11.	How would you rate the approaches to learning used in this Career Education Program?	4.45
	Average	4.44

As can be seen from these results parents expressed an extremely high opinion of the Academy program with most responses nearing the positive extreme. Since the rate of return on the Parent Opinion Survey was approximately 50%, an unknown sample bias was incurred. Existing data, however, argue strongly that parental support for the program is high.

Hypothesis 4. Institutional relationships will be established to enable the conduct of the program. In addition to the commercial and industrial firms necessary to provide specific learning resources as discussed above, two principal integrating sets of institutional relationships and structures need to be established in order to conduct the Academy for Career Education Program. The first is with the public school district. It is this set of relationships which allows the program to operate with public school students as a population and determines the future of the program outside of the experimental context. The second is with the Chamber of Commerce. It is this set of relationships which facilitates the participation of community resources and, in combination with the school district interactions, seeks to accomplish the goal of uniting business and education in common enterprise.

The testing of this hypothesis is not amenable to any statistical treatment. The relationships either exist or they do not. The issues of quality and longevity lay outside of the scope of this report. It can be stated that the desired relationships were established in a form which seemed to meet the objectives.

The Philadelphia School District has become an increasingly integral partner in the Academy for Career Education. In FY 1974 a cooperative program was established wherein Academy students received much of their educational program through the Academy on a released-time and after-class basis, while having public school resources open to them. Basic state credit requirements were successfully met by Academy learning activities. Student public school schedules were substantially adjusted to accommodate Academy programmatic needs. During FY 1975 these relaships are expected to continue their developmental pattern with an integration of Academy and public school facilities and staff.

The Greater Philadelphia Chamber of Commerce has functioned well in identifying community economic resources and initiating contact for the Academy. This successful function and the relationships developed within its context have enhanced the role of the Chamber as a viable intermediary between the economic and educational communities.

These results strongly support the contention that institutional relationships which enable conduct of the program can be established. They further suggest that, beyond facilitating the demonstrational Academy program, a replicable and larger scale experience-based career educational program is feasible in the public schools.

Hypothesis 5. It will be demonstrated that the program can be operated on a feasible cost basis. In the "FY 1974 Operating Plans," a goal for the Career Education Program was to reduce the FY 1973 per pupil cost of instructional services 30 percent; the targeted cost per student for FY 1974 was $3,309.36. This targeted cost is accepted as the definition of a feasible cost.

Costs for FY 1974 are based on total expenditures for the core components of the program (Career Development, Career Guidance, and Basic Skills). A fourth component (Supplementary Activities) has been omitted from the cost analysis since it will no longer be provided by the Career Education Program and since it was offered only to senior students. The costs of program administration have been prorated to the costs of each core component.

The total cost of providing the RBS Career Eduction Program in FY 1974 was $294,412. Based on an average enrollment of 134 students, the cost per student for FY 1974 was $2,197.10; this figure is $1,112.26 below the definition of a feasible cost per student. Thus, FY 1974 results support the hypothesis that the program can be operated on a feasible cost basis.

Table 68 presents cost information regarding total expenditures, cost per hour scheduled, and the cost per student.

Table 68

Career Education Program

Combined Fifth, Sixth, and Seventh Quarters

Unit	Total Costs	Total Hours Scheduled	Cost Per Hour Scheduled	Average Student Enrollment	Cost Per Student
Career Development	$127,324	25,609.6	$4.97	134	$ 950.18
Career Guidance	67,657	7,114.0	9.51	134	504.90
Basic Skills	99,431	21,440.7	4.64	134	742.02
All	$294,412	54,164.3	$5.44	134	$2197.10

Hypothesis 6. It will be demonstrated that there is a ready market for the program. Efforts to publicize the experience-based career education program and elicit public school interest outside of Philadelphia have been to date limited and embryonic. Generating wide spread interest would be at this point premature because the project's ability to respond to such interest is narrowly proscribed. Only minimal resources are available to provide follow-through information. Developmental financing extending beyond the Philadelphia demonstrational project is presently non-existent.

However, in order to gain a preliminary assessment of the program's marketability, basic information about the RBS project was mailed to the 694 public school district superintendents of Pennsylvania, New Jersey, and Delaware in May, 1974. To date, 95 of these have responded indicating a definite interest in the program on the part of their districts. A total of 43 of these were from Pennsylvania, 10 from Delaware, and 42 from New Jersey.

This initial expression of interest would tend to support the market potential of the program. It exceeds the project's ability to effectively pursue follow-up aimed at extensive public school adoption of the program. A more vigorous attempt in marketing investigation backed by the resources for market capitalization would be likely to result in many public schools actually implementing an experience based career education program.

Non-Hypothesized Effects

Although it was not included as part of the original evaluation plan for FY 1974, a follow-up study of Academy graduates was conducted.

It was reasoned that the post-graduation effects of the program were the most significant ones and a start should be made in the longitudinal investigation of effects. The results of this initial investigation are briefly reported here because they are pertinent to a summative evaluation of the program and because they suggest direction for future study.

Three student groups were selected for the longitudinal study. The Experimental group consisted of 67 students who had graduated from the Academy during FY 1974. The Control group consisted of 24 students from the Context group who had graduated from Olney High School during FY 1974. The Non-Graduate Group consisted of 21 students who had dropped out of the Academy program during FY 1974.

These students were administered a brief survey by telephone near the end of the summer. Approximately 90% of the students in each group could be contacted for response. The results are thus fairly complete.

The key survey items with the responses obtained are presented below:

1. What is or will be your present education or career situation?

Category / Students	Experimental		Control		Non-Grads	
	#	%	#	%	#	%
Post Secondary School	31	53	8	38	0	0.0
Full-Time Employment	7	12	4	19	5	26.3
Part-Time Employment	2	3	1	5	1	5.3
Military Service	6	10	1	5	0	0.0
Full-Time Homemaker	2	3	0	0	0	0.0
Still Planning*	11	19	7	33	13	68.4
Totals	59	100	21	100	19	100.0

* Of the non-graduates in this category eight were enrolled in their original high school and five were unemployed, at the time this questionnaire was given.

2. Has anyone associated with the Academy/Olney been of help to you in getting a job or getting into a training/education program?

Response / Students	Expermental		Control		Non-Grads	
	#	%	#	%	#	%
Yes	27	46	6	29	8	42.0
No	28	47	5	24	9	47.5
No Response*	4	7	10	47	2	10.5
Totals	59	100	21	100	19	100.0

* The control students in this category could not decide whether guidance helped them or not. The experimental and non-graduate students in this category did not respond.

3. Did your experiences in school help you make a decision about what career you would like to follow?

Response / Students	Experimental		Control		Non-Grads	
	#	%	#	%	#	%
Yes	38	64	11	53	Does not apply	
No	18	31	10	47		
No Response	3	5	0	0		
Totals	59	100	21	100		

As can be seen from these results, Academy graduates were more prone toward further education and were more firm in their planning than were control graduates. Both Academy graduates and non-graduates reported substantially more placement help from the Academy than control graduates reported for their school. A greater percentage of Academy graduates felt that their school experience was helpful in career decision-making.

These results support the efficacy of the program in facilitating career planning. They also suggest a fostering of desire for post secondary education in preparation for a career. This initial investigation may serve to highlight the need for longitudinal study of program effects. Equivalent control groups are needed for drawing definitive conclusions. Time series data are required for documenting development. Follow-up studies should assume increasing priority as the need for summative evaluation in program dissemination increases.

V. SUMMARY AND RECOMMENDATIONS

Overview

Research for Better Schools, Inc. (RBS) is responsible for developing, operating and testing a prototype of experience-based career education (EBCE). This program has been operationalized in Philadelphia as the Academy for Career Education (ACE). The Academy operated during FY 1974 as a licensed private academic school with senior students receiving their total educational program from the Academy. All seniors were in the program for their second year. All juniors and sophomores were in the program for their first year during FY 1974. Their curriculum differed somewhat as a result of an increasing integration of the Academy with the Philadelphia Public Schools. Juniors and sophomores participated in the "core" Academy program, while taking some courses (foreign languages, driver training, physical education, etc.) at their sending school. Students thus fell into two distinct groups: seniors who attended the Academy courses only, and juniors and sophomores who attended some public school courses in addition to Academy offerings. All students participated in the "core instructional component" which consisted of three major subdivisions: Career Development, Career Guidance and Basic Skills. This core constituted the bulk of each student's academic program with at least 14 hours of instruction per week. It is this core program which forms the substance of the present report. The other instructional component, Supplementary Programs, was available only to seniors and has been discontinued as movement is made toward having the public schools adopt an experience-based career education program.

The first subdivision within the instructional core was Career Development. This consisted of Career Exploration and Career Specialization activities for students. In Career Exploration students experienced group programs (selected by them out of a large number of possiblities) at community and industrial sites provided by employees of the various businesses, unions and agencies involved. Students participated in these first-hand activities in order to learn about the economic community, to test their own vocational interest, and to obtain information for their career planning. In Career Specialization students selected a specific career area and investigated it in depth. These experiences were highly individualized and required extensive interaction at a single community site.

The second subdivision within the instructional core was Career Guidance. This consisted principally of small group guidance sessions which met each week. These sessions focused on life skills, academic motivation, integration of Academy activities, self exploration and career planning. Career Guidance also included individual counseling of students.

The third subdivision within the instructional core was Basic Skills. Students were scheduled for activities in an Individualized Learning Center several times each week. These activities focused on development in Communication Skills and Mathematics and utilized a variety of individualized instructional resources. The Individualized Learning for Adults approach was the primary learning system.

These subdivisions combined to form a core of instructional activities which were characteristically individualized and responsive to student needs. The Academy program was designed to maximize student development and choice within an operational structure which could serve a large number of students at feasible costs.

During FY 1974, over 150 students participated in the Academy for Career Education program. Of these, 67 graduated this year after spending two years at the Academy. The remainder were juniors and sophomores who will return next year. The Academy student body seemed to be representative of an urban school population.

The evaluation of the Academy for Career Education program has been conducted by an internal evaluation staff. Evaluation activities were of five principal types: formative evaluation, summative evaluation, data systems development, instrument development and cooperative research. The latter two activities occurred within the context of an active and productive formal interchange among the four EBCE project evaluation staffs and the sponsoring agency (NIE) evaluation officer. Data systems development was undertaken to provide accurate information in program operation management and evaluation. The formative and summative activities formed the major occupation of the evaluation staff. These are discussed in depth below as they relate to evaluation recommendations.

Formative Evaluation

Formative Evaluation was accomplished through the administration of questionnaires to project participants, the inspection of project records and interviews with staff. The formative structure was based on assessing key tasks within each major program subdivision. All pertinent information available was applied to the evaluation of these tasks. Results and recommendations are discussed below for each subdivision.

Career Development. The process of identifying and recruiting employers using both the Greater Philadelphia Chamber of Commerce and project staff appeared to function well. A total of 84 commercial and industrial firms conducted learning activities for the Academy students during FY 1974; this represents an increase of 83% over FY 1973. Participating employers also served on the Academy Board of Directors and were involved in recruiting both new students and employer resources.

Employers were grouped into clusters based upon commonalities in products and career categories represented. It was intended that the instructional content and objectives would be integrated among employers within clusters. This was to be accomplished through "cluster meetings" and cooperative program development. To a large extent this did not occur. Since the integration of activities within clusters is seen as important to curriculum continuity, it is recommended that means of accomplishing the intent be pursued by effecting old procedures or designing new ones.

The pool of employer resources available for student selection during FY 1974 was more than sufficient to meet student needs and interests in Career Exploration. In some cases inefficient scheduling produced problems in matching individual students with learning activities, but overall the process went well. The situation was different for Career Specialization. Most students who requested these activities could not be scheduled for what they wanted. This represents a serious shortcomingin program conduct. It is recommended that extensive effort be applied to developing the resources for Career Specialization, promoting the activities among students, and enabling students to be scheduled into the activities of their choice.

The course plans and student contracts available for employer learning activities were generally good, but lacking in specificity. Of more basic concern, only about half of those plans which should have been produced were actually extant for evaluation. This signals poor documentation at best, and may be indicative of more substantial problems. It is recommended that all course plans and student contracts be produced for inspection before the learning activities they cover commence. The curricula can be evaluated only after this condition has been met.

Available test results indicated that students learned from their Career Development activities. Surveys indicated that students also felt these activities were very worthwhile and well conducted. Student opinions were strongly positive about most aspects of both the Career Exploration and Career Specialization courses.

Overall, it can be said that Career Development resources were effectively identified and recruited. Most students (except in Career Specialization) were able to participate in the learning activities they wanted. As a result of this participation students learned and perceived the employer courses very positively. The weak links were the implementation of Career Specialization and individual program documentation.

Career Guidance. The Guidance Groups constituted the major instructional activity within this program subdivision. On all measures this activity was identified as a problem area. Tests of knowledge administered to a random sample of students suggested low efficiency in transmitting information. A full 75% of the random sample students selected the Guidance Groups as the least worthwhile program element. Roughly half of all the students in the Academy felt that the guidance groups were not beneficial. Only 1% of the FY 1974 graduates indicated that the guidance groups were the most useful part of the Academy program. The Needs Research and Personal Position Audit was operationalized as a segment of the Guidance Group curriculum for tenth and eleventh graders. Documentation of the conduct of this activity was insufficient to permit evaluation in any substantive way. These results clearly indicate that the Guidance Groups deserve a major rethinking. Since they have been designed as an instructional activity, it is important to create the motivational climate and instructional content whereby learning may occur.

Transactional Activities were operationalized as Life Skills Specializations, a parallel to Career Specializations with a human services emphasis. Since fewer than 10 students participated in this activity, evaluation could not be conducted in any generalizeable way. This activity has been combined with Career Specialization, and thus is of no future concern as a discrete entity.

Student placement was not undertaken as a planned activity of the guidance staff. However, post-secondary pursuits are considered to be an important variable affected by the program as a whole. In this regard, the outcomes of student placement were very encouraging. In a survey conducted at the end of the summer, 53% of the Academy graduates were about to enter post-secondary education. Another 15% were employed, 10% in the military service, 3% homemakers, and 19% still planning. A full 71% indicated that they were actively planning a career; and 64% said that the Academy experiences had helped them to select a career. About half further indicated that Academy personnel had been of help in getting a job or getting into a training/education program.

Overall it must be concluded that the implementation of the guidance program did not proceed well. Students evidenced a predominantly negative attitude; documentation was often inadequate; in some respects it appeared that planned activities were not actually implemented. The outcomes of student placement, however, were very encouraging. It does appear that the guidance element needs reconsideration in form and implementation.

Basic Skills. The Basic Skills subdivision was implemented as the Individualized Learning Center. Individualization was apparently effected. The results from a staff checklist supported the proper use of individualized materials. Students felt that the program allowed them to progress at their own rate and that the materials were providing for their individual needs. A field investigation also demonstrated that hundreds of different learning activities were in active use by students. This high level of individualization should be continued.

The documentation systems utilized in the Individualized Learning Center are necessarily complex in order to accommodate personalized student programs. They functioned well providing operational and evaluative information. A computer system was designed and partially developed to serve both instructional and research purposes. A good deal of development remains to be done. This effort should be supported to the degree possible as a facilitator for large scale implementation.

Both students and staff had a favorable opinion of the materials utilized in the Individualized Learning Center. Students felt that the learning resources were above average and that they were learning more than in their previous schools. Staff indicated that the interest level of the materials could be improved. This might alleviate the attendance problems which were noted. Such development should be encouraged.

Overall, the Basic Skills program seemed to function well. Students were provided for individually. The documentation systems were adequate, but could be improved if time and resources can be applied to computer systems development, particularly in operational utility. Continuing to develop the interest value inherent in the materials was also advised.

Summative Evalaution

The summative evaluation design was based upon two experimental groups and two control groups. The experimental groups were the ACE group (twelfth graders in the program for their second year) and the ACE-Olney group (tenth and eleventh graders in the program for their first year). The control groups were the Comparison group (students who had been accepted but dropped out) and the Context group (students who were randomly selected from the sending school). The latter student groups were non-equivalent controls since random assignment to experimental and control situations could not be accomplished. The ACE group needed to be anlayzed independently because it was selected from a city-wide population of public, parochial and private school students who had participated in the program for two years. The ACE-Olney group was analyzed relative to the Context and Comparison groups because all were drawn from a single Philadelphia high school, Olney. The Comparison group was intended to control for interest in career education since they applied for the program (but dropped before it begain). However, their group characteristics proved to be sufficiently different from the Academy students to make the validity of comparison dubious. The Context group was intended to depict the "typical" high school student. In this it was successful, limited only by the self-selection of students who elected to take the tests.

Both experimental and control students were administered a group of summative tests at the beginning and end of the school year. These tests consisted of the Comprehensive Tests of Basic Skills (CTBS) to measure traditionally-conceived cognitive development, the Career Maturity Inventory (CMI) to measure career awareness and competencies, and the Assessment of Student Attitudes Scale (ASA) to measure attitudes toward learning environments.

The summative design was thus a quasi-experimental design with a pretest and posttest battery of instruments administered to experimental groups and non-equivalent controls. This design is limited in its generalizeability because the degree to which experimental group results and control group results may be deemed validly comparable is questionable. The design was, however, judged to be reasonable given the early state of project development. Results should be broadly indicative of trends, if not precisely interpretable as effects of an experimental educational program. The conclusions and recommendations drawn from the summative evaluation of RBS' Experience Based Career Education program are here presented in terms of hypotheses formulated as being central to the intended success of the program.

Student Effects Hypotheses. It was found that the Academy students gained significantly over the course of the year in many basic skills areas measured by the Comprehensive Tests of Basic Skills. The grade equivalent gains were as follows:

Group Subtest	ACE	ACE-Olney	Comparison	Context
Reading				
Vocabulary	.3	.6	.9	.4
Comprehension	.9	-.1	.7	.1
Total	.6	.4	.8	.1
Arithmetic				
Computation	.5	.7	-.3	.2
Concepts	.7	.9	-.1	.6
Applications	1.1	.7	-.3	-.6
Total	.7	.8	.2	.2
Average Gain	.68	.59	.34	.14

As can be seen from these results Academy students gained substantially more than public school students in nationally normed grade equivalence units. These differences in gains were not, however, statistically significant in the analyses reported herein. This suggests that the Academy is at least as effective as the public schools in producing growth in basic skills. This hypothesis cannot be definitively tested without true controls (random assignment of students). Present results with non-equivalent control subjects depict Academy students in releation to public school students whose statistical comparability is an unknown.

Regarding the career maturity variables as measured by the Career Maturity Inventory,only first year students (ACE-Olney) gained significantly over the course of the year. These gains were significantly greater in each case than the growth evidenced by control students. This suggests that the Academy program contributes more to the career maturity of students than public school programs. Again, a definitive test of this would require randomly assigned experimental and control groups.

Academy students generally demonstrated a more positive attitude toward school than control students as measured by the Assessment of Student Attitudes Scale. This suggests that the Academy experience promotes favorable student opinions of their learning environment. This could be an important motivational factor, but definitive conclusions must await testing under equivalent control conditions.

The testing of student effects hypotheses generally supported Academy student growth in basic skills and career maturity, as well as the development of favorable attitudes regarding learning environments. In some cases the data suggested that the Academy is more effective than traditional school programs in promoting the learning and attitudes represented by the measures employed. However, all analyses were limited in conclusiveness by the fact that experimental and control groups were non-equivalent. The major recommendation to be derived from this is that future study should include a randomized student population design. A second recommendation is that the instrumentation should be carefully assessed for appropriateness and intepretability. During FY 1974 some instruments were used with a knowledge of their limitations because they were the best available. To the extent possible, instrument modification should be undertaken to reduce limitations incurred. A third recommendation is derived from the observation that in some cases second year students did not do as well as first year students. Future designs should include the capability for analyzing multiple year effects.

Other Effects Hypotheses. In the investigation of these effects it was found that business community resources could be made available to meet student needs and interests in the Academy program. Some inefficiency in the utilization of these resources was noted, but program feasibility in terms of attracting community input was established. It is recommended that an increased effort be made in scheduling to get students into those learning activities expressed as their first choice. A more complete expression of student preference should also be elicited and documented. Improvements are needed both in the availability of resources and scheduling efficiency for Career Specialization to meet its objectives.

Regarding employer attitude and commitment to the program, the hypothesis stated could not be directly tested. It was noted, however, that employers seemed to be generally satisfied with the program, and that fewer than 20% dropped out during FY 1974. The major employer complaint seemed to be in reference to a lack of feedback from the Academy regarding employer program development, implementation and effectiveness. It is recommended that this concern be further investigated and attention given to its remediation.

Parent attitude toward the program was found to be especially positive. Parents indicated that the Academy had provided a valuable learning and developmental experience for their children. Further, they felt that such results would not have been as obtainable by their children in the public schools. Clearly, this constituent body sees a valuable role for EBCE in public education and their continued support and participation should be encouraged.

Progress was also seen relating to another important constituent body: the public schools. Relationships with the Philadelphia Public

Schools have developed from a status of coexistence during the first year to a cooperative venture during FY 1974. This seems to be moving toward a situation wherein the public schools will sponsor the Academy program in the future. Such development approaches the major project goal of making the EBCE experience available to many students, not just those in demonstration programs. Substantial reductions in costs this year will undoubtedly also foster progress toward this goal by making larger scale adoption more cost feasible. The development of relationships with the Philadelphia Public Schools was thus seen as very successful.

The attractiveness of EBCE does not seem to be limited to Philadelphia. The model has generated interest among public school districts throughout the Pennsylvania - Delaware - New Jersey area. A mailing of information about the Academy resulted in positive response from close to 100 school districts interested in finding out how EBCE might be utilized in their schools. This was an initial effort in testing the market, and it was an encouraging one. It should be attempted to follow up on the interest which has already been expressed, and further dissemination of EBCE should become an increasing priority.

Non-Hypothesized Effects. The conclusion to this section is fittingly concerned with FY 1974 graduates of the Academy for Career Education. Graduates demonstrated very positive attitudes toward the program. They indicated that their Academy experiences had been beneficial in planning their careers, and, as a group they seemed to be taking more positive action in career pursuit than control group graduates. The longer term program effects are probably the most important ones, and they should be accorded priority in future evaluation design.

Final Words

In the totality of the Final Evaluation Report for FY 1974 extensive information about the RBS Career Education Program has been presented. In the process important points may have been obscured by the breadth of the ground covered or simple reader fatigue. These "final words" have been reserved to highlight several conclusions, assertions and issues which are seen as superordinate in program evaluation. To wit:

The term "Final Report" is hopefully a misnomer. It is "final" for FY 1974, but FY 1974 stands as the successor to FY 1973 and the predecessor of FY 1975. The project and its evaluation must be understood in the perspective of a progressive activity. The summative evaluation of program effects reported here does not represent a conclusive statement of effects; it represents only the best statement possible at this point in time. The present "best statement" is distinguished from a "conclusive statement" by the lack of adequate control groups, gaps in instrumentation, and difficulties in design implementation. These discrepancies between the ideal and the actual are neither staggering nor shocking; they are factors to be confronted and surmounted as the evaluation effort develops. The limitations are fewer this year than last, and next year further development will be in evidence. From this it is important to understand that the FY 1974 evaluation represents an interim stage in assessing effects, not a final judgement. Last year there were no comparison group data at all and instrumentation was primitive. This year there were non-equivalent controls and developmental instrumentation. Next year there will be true control subjects and more complete instrumentation. The fact that evaluation findings have limitations due to the stage of evaluation development does not per se detract from the significance of the results if they are interpreted in cognizance of this inherent limitation.

As should be evident from the scope of the Final Report, the breadth of topics covered by the evaluation design during FY 1974 was extensive. The evaluation tasks were both multitudinous and diverse. The resources applied to the effort were also substantial and deployed with all the administrative efficiency available. The extensiveness and multifaceted nature of the tasks at hand, however, mitigated against the accomplishment of all tasks with the deliberating depth which would be considered optimal. Various integrations of findings, interpretations of outcomes, cross substantiations of results, and complex analyses were seen as desireable but simply could not be done. This may be interpreted as spreading the resources too thinly. It is a fact of life in comprehensive program evaluation on the one hand, but it contains a recommendation on the other. Greater selectivity in the topics for evaluation should be exercized as the evaluation effort develops. It is asserted that the resultant gains in depth enabled more than offset the losses in scope incurred.

The hope that an evaluation will result in a simple "good" or "bad" rating for the subject of the evaluation is no more fervent in the mind of the reader of evaluation reports than it is in the mind of the evaluator. This fantasy, however, only comes true in public relations documents. In an effort to aid the readers of this report, and perhaps induce a false sense of security, a brief statement of perceived net effects of the Academy program is here presented. The principal EBCE constituent groups - students, parents, employers and public school representatives - were very positive about the value of the program personally and as an educational contribution. Students gained substantially in knowledge, personal career awareness and affective dimensions during their experience in the program. In many cases student development in the program was superior to that apparent in the public schools. In no case was the development of public school students superior to that of the students in the program. Problems in the implementation of the model have been identified which suggest the need for continued development and refinement. Real interest in this type of program has been expressed by many public school districts. The fact that the program can be implemented with reasonable indications of accomplishing intended objectives which are valued by major constituent bodies argues for the significance of EBCE as a viable educational innovation. Its potential should continue to be pursued.